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FOREWORD

Ed King, RTCC Editor

Two years ago in Durban, governments agreed to work towards a legally binding emissions reduction deal to be signed in 2015, and rolled out in 2020. Poland marks the half-way stage of this journey, and it will be an important gauge of progress for the 195 parties involved.

The recent IPCC climate science report underlines the urgency of the situation. It set a limit to the amount of carbon countries can release if we all want to avoid warming beyond 2 degrees. On current trajectories that could be blown by 2035. As PwC's climate policy expert Jonathan Grant observed recently: "For many companies, the debate about the science is over. They recognise that climate change is happening".

What should give delegates hope is that it is not difficult to set out what we need to do. We need to build a carbon neutral energy system, phasing out the use of coal and gas for electricity, unless carbon capture and storage (CCS) technology improves.

We need to invest in carbon neutral transport for vehicles, trains, ships and eventually planes. Three; we need to stop using gas to heat our homes. Four, we need CCS for carbon intensive industries like steel, petrochemicals, plastics and cement. And finally – it's time to address demand, and look at boosting energy efficiency measures.

This year's RTCC magazine is packed full of great ideas to drive the low carbon revolution forward, from business, political and economic perspectives. This increasing weight of investment and evidence should give negotiators the confidence they need to drive an ambitious agreement.

Ed King, RTCC Editor

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Cocktail Reception
Film Launch

Opera Grand Ballroom
Intercontinental Warsaw

November 19, 2013
18:00-20:00

Tuesday 19 November

UNFCCC COP19 GEF Side Event:
High-Level Forum on Synergies for Global Environmental Benefits

1:15pm - 2:45pm, Hotel Intercontinental Warsaw, Poland

This high level forum, convened by the GEF CEO, will present the GEF strategic development. In particular, discussions will focus on efforts to enhance synergy to generate global environmental benefits across GEF focal areas of climate change, natural resources, chemicals, and others.

Speakers: Naoko Ishii, Robert Dixon, Boni Biagini, Chiz Aoki

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Wednesday 20 November

UNFCCC COP19 GEF Side Event:
NAP, Challenges and Opportunities for Climate-Resilient Development

1:15pm - 2:45pm, Hotel Intercontinental Warsaw, Poland

In response to the guidance by the COP a landscape of NAP support mechanisms and processes is currently evolving. How can these mechanisms best promote country-level ownership, coherence as well as a continuous, iterative and successful process?

Speakers: GEF, GIZ, UNEP and UNDP

United Nations
Framework Convention on Climate Change

COP19 summit in Warsaw a vital step towards global emissions reduction deal in 2015 says UN climate chief.

By Christiana Figueres,
Executive Secretary,
United Nations Framework
Convention on Climate Change

First, the world is eagerly waiting for the ratifications of the second commitment period of the Kyoto Protocol. Second, we must take the institutional arrangements that have already been agreed to and move them from the design phase into the operational phase. That includes all the institutional arrangements to support developing countries in both finance and technology.

All of this is already agreed. Then we have the issues that are still under negotiation and which Warsaw must move. There, Warsaw needs progress in 3 major areas: First: finance. We must be able to move the Green Climate Fund into its operational phase. The board is getting ready for an initial capitalization in next year. One goal of the GCF will be to help to de - risk and leverage private capital. The annual $ 100 billion that has been committed to, as climate finance needs to be understood in the context of real need.

The IEA says we will need a yearly investment of $1 trillion into clean energy and resilient infrastructure to transform in order to transform the economy. The $100 billion is then basically the tail that needs to wag the dog: that funding needs to point the dog in the direction of green capital flows. It must move because we know the financing is not $100 billion per year, it is $1 trillion. That is what needs to be mobilized.

Second: loss and damage. Progress on this is incontrovertible. We know that we had, at the last COP in Doha, a starting decision. But we are far away from where we have to be on both adaptation and the next phase on loss and damage, so we need very clear progress on the mechanism to support loss and damage. Third: the ADP. We need to further clarify the elements to be included in a draft agreement. Countries need to consider an ambitious and clear draft in Lima in 2014. Such a draft needs to include two difficult, but absolutely crucial points of progress from Warsaw.

Number one, governments have to walk out of Warsaw knowing their next step is to go home and do the necessary internal analysis, so that they are in a position to put their national contribution on the table towards a global solution. Number two, Warsaw must figure out how the process is going to recognize all of the other actions, activities and initiatives that are going on outside the formal process.

The climate change negotiating process is the centre, but certainly not the circumference of climate action. The point of the formal process is for governments to point in the right direction and then all the sectors and initiatives actually provide the speed and action that is necessary. Warsaw needs to change the narrative that we have created over time.

We need to leave Warsaw with a dominant narrative of constructive engagement on climate action. That is why the secretariat is using Warsaw as a platform to showcase action that is already occurring. To this end we have chosen three areas: women, the urban poor, and innovative financing. On their side the COP presidency will be offering Warsaw as a platform for cities and businesses to show what they're doing. Warsaw needs to be a resounding response to the call for action that has been put out by the first IPCC Working Group.

My friends, now is the time and Warsaw needs to show that we have understood that now is the time.

This text is part of a longer statement made by the Christiana Figueres at the Chatham House Climate Conference on Monday 21 October 2013

Photo: © UN Photo, Paulo Filgueiras.

COP19/CMP9
UNITED NATIONS
CLIMATE CHANGE CONFERENCE
WARSAW 2013

Poland, for the second time in a very short period, has the honour to host the United Nations Conference on Climate Change. We will do our utmost to ensure that this year's summit is successful both in terms of content and organisation.

We know how important Warsaw is on the climate policy map. We face a huge challenge. With our meeting, we continue a journey towards the first-ever agreement on reducing greenhouse gas emissions to apply to nearly 200 countries – Parties to the Convention. The success of the COP21 conference in Paris will be built largely on what is agreed in Warsaw.

The goal we set for ourselves in connection with the organisation of COP19 is to elaborate a schedule between Warsaw and Paris and discuss main elements of the new agreement. This is the foundation we want to prepare and as we all know it is the foundations that form the base for a house. They might not be spectacular or even visible, but they determine the sustainability of a building. The situation is similar in case of the climate agreement. The stronger the base we will all prepare in Warsaw but also next year in Lima at COP20, the stronger the global deal we all so determined to have.

My priority as the President of COP19 is to ensure that the process of negotiations in Warsaw proceeds in a democratic and transparent way making the Parties and other partners feel responsible for their contribution. I want to make sure that the work on the development of the agreement addresses the interests of all, providing a balance between the developed and the developing countries. I believe we can succeed only if we generate a trustworthy environment for all parties to feel safe and sure that their positions will be respected and properly reflected in the agreement.

Poland understands well how to implement climate mitigation measures in combination with sound growth policy. Poland has rich achievements in this area. Throughout the past 20 years, we have managed to reduce our GHG emissions by more than 30% more than doubling our growth indicators at the same time reducing poverty and increasing considerably welfare of our society. We reduced the amount of pollutants emitted into the air and water, developed new, environment-friendly jobs. These successes encourage us to continue on our path. We also want to share the success and experience with other countries, which, as Poland before, embark on this challenging adventure towards a sustainable economy.

The success of the COP19 summit will not be accomplished without involvement of all parties that have influence, without you. That is why I count on your help and commitment. The statement that the fate of our planet lies in our hands, in relation to the negotiations of the global climate agreement, certainly is not an empty truism. See you in Warsaw.

Marcin Korolec, COP19 President

CLIMATE CHANGE SCIENCE AND ITS RELEVANCE TO POLICY

By Dr. R.K. Pachauri

The Intergovernmental Panel on Climate Change (IPCC) is now in the final stages of completing its Fifth Assessment Report (AR5). The first contribution to this report prepared by Working Group I (WG-I) of the IPCC, covering the physical science basis of climate change, was completed and released in September 2013. This has been a major effort to advance our knowledge substantially beyond what we were able to provide in the Fourth Assessment Report (AR4) released in 2007. In several respects the WG-I report as part of the AR5 has confirmed and strengthened several of the findings arrived at in the AR4. The WG-I report involved 209 Lead Authors and 50 Review Editors drawn from 39 countries. It also benefitted from 600 contributing authors from 32 countries. In the process of completing this report the authors have actually studied and cited over 9200 scientific publications, almost two-thirds of which have been published after 2007. In other words this report contains the results of a substantial amount of new research and knowledge which have appeared in publications after the previous report.

The IPCC functions in an open and transparent manner, and at various stages of the process of completing an assessment the authors seek expert reviews as well as reviews from governments on various versions of the drafts of the report before finalisation. In the case of the WG-I report 54,677 comments were received from 1089 expert reviewers drawn from 55 countries, and 38 governments provided their comments as part of this process. Some of the major findings of the report include the statement that warming of the climate system is unequivocal, and that since the 1950s many of the observed changes have been unprecedented over decades to millennia. It was observed that the atmosphere and oceans have warmed, the amount of snow and ice have diminished, sea level has risen, and the concentrations of greenhouse gases (GHGs) have increased. Most significantly each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850. In the Northern Hemisphere, 1983–2012 was likely the warmest 30-year period of the last 1400 years.

It was also found that ocean warming dominates the increase in energy stored in the climate system, accounting for more than 90% of the energy accumulated between 1971 and 2010. It is *virtually* certain that the upper ocean (0–700 m) warmed from 1971 to 2010, and it *likely* warmed between the 1870s and 1971. In the AR4 there was a substantial amount of detail provided on the manner and rate at which bodies of ice across the world were melting. In the AR5 we have stated that over the last two decades, the Greenland and Antarctic ice sheets have been losing mass, glaciers have continued to shrink almost worldwide, and Arctic sea ice and Northern Hemisphere spring snow cover have continued to decrease in extent. The IPCC had assessed in the AR4 that melting of ice across the globe and thermal expansion of the oceans was resulting in sea level rise. However, in the AR5 it has been stated that the rate of sea level rise since the mid-19th century has been larger than the mean rate during the previous two millennia. Over the period 1901–2010, global mean sea level rose by 0.19 (0.17 to 0.21) m. All these changes are taking place essentially because human actions have been contributing at a rapidly increasing rate to enhancing the atmospheric concentrations of major greenhouse gases (GHGs). The atmospheric concentrations of carbon dioxide (CO2), methane, and nitrous oxide have increased to levels unprecedented in at least the last 800,000 years. CO2 concentrations have increased by 40% since pre-industrial times, primarily from fossil fuel emissions and secondarily from net land use change emissions. The ocean has absorbed about 30% of the emitted anthropogenic carbon dioxide, causing ocean acidification.

> **"The IPCC produces assessments which are policy relevant but not policy prescriptive"**

In the AR5, scenarios for the future have been defined in terms of specific Representative Concentration Pathways (RCPs). If we look at projections for the future we find that global surface temperature change for the end of the 21st century is *likely* to exceed 1.5°C relative to 1850 to 1900 for all RCP scenarios except RCP2.6. It is *likely* to exceed 2°C for RCP6.0 and RCP8.5, and more likely than not *to* exceed 2°C for RCP4.5. Warming will continue beyond 2100 under all RCP scenarios except RCP2.6. Warming will continue to exhibit interannual-to-decadal variability and will not be regionally uniform. Also, the global ocean will continue to warm during the 21st century. Heat will penetrate from the surface to the deep ocean and affect ocean circulation. Further, it is *very likely* that the Arctic sea ice cover will continue to shrink and thin and that Northern Hemisphere spring snow cover will decrease during the 21st century as global mean surface temperature rises. Global glacier volume will further decrease. Global mean sea level rise

Photo: © UN Photo/Eskinder Debebe.

for 2081–2100 relative to 1986–2005 will *likely* be in the ranges of 0.26 to 0.55 m for RCP2.6, 0.32 to 0.63 m for RCP4.5, 0.33 to 0.63 m for RCP6.0, and 0.45 to 0.82 m for RCP8.5. For RCP8.5, the rise by the year 2100 is 0.52 to 0.98 m, with a rate during 2081–2100 of 8 to 16 mm yr^{-1}. These ranges are derived from specific climate projections in combination with process-based models and literature assessment of glacier and ice sheet contributions.

In the case of the carbon cycle it was found that climate change will affect carbon cycle processes in a way that will exacerbate the increase of CO2 in the atmosphere. Further uptake of carbon by the ocean will increase ocean acidification. Human actions in the past have limited the choices now available to us for reduction of GHG emissions in the future. For instance, limiting the warming caused by anthropogenic CO2 emissions alone with a probability of >33%, >50%, and >66% to less than 2°C since the period 1861–1880, will require cumulative CO2 emissions from all anthropogenic sources to stay between 0 and about 1560 GtC, 0 and about 1210 GtC, and 0 and about 1000 GtC since that period respectively. These upper amounts are reduced to about 880 GtC, 840 GtC, and 800 GtC respectively, when accounting for non-CO2 forcings as in RCP2.6. An amount of 531 (446 to 616) GtC, was already emitted by 2011.

As part of the AR5 three other reports are due to be completed and released by the IPCC. The Working Group-II report due in March 2014 would deal with impacts, adaptation and vulnerability and the Working Group-III report due to be completed in April 2014 would assess mitigation measures. Finally, the Synthesis Report (SYR) which would be completed in October 2014 would essentially synthesise the material from all the three Working Group reports as well as special reports which have been brought out by the IPCC since the AR4. The IPCC produces assessments which are policy relevant but not policy prescriptive. The SYR would provide a comprehensive assessment of policy relevance in relation to actions that need to be taken to deal with the challenge of climate change. But the reinforcement and elaboration of the findings of the AR4 as contained in the AR5 WG-I report tell us clearly that human society already has adequate scientific knowledge on the basis of which action can be taken to deal with the challenge of climate change.

Dr Rajendra Pachauri is Director-General of the Energy & Resources Institute (TERI) and chairman of the Intergovernmental Panel on Climate Change (IPCC).

CLIMATE BUSTER A-Z

The technical language and huge volume of acronyms can make following climate change negotiations challenging. Louisa Casson and Jamie Peters from the UK Youth Climate Coalition (UKYCC) have dissected the jargon so you too can understand what on earth (in brackets) is going on.

ADP: This is the second COP to convene the Ad Hoc Working Group on the Durban Platform for Enhanced Action. The Durban Platform for short has discussions split between two main areas: Workstream 1 (WS1) focusing on a 2015 global climate deal and Workstream 2 (WS2) negotiating pre-2020 action to close the 'emissions gap' between promised action and the need to avoid tipping points.

Bottom-up vs top-down: As 2015 and the deadline for a global deal gets closer, debate around the architecture of the deal are heating up between proposals for a 'bottom-up' approach of countries making their own non-binding voluntary targets to reduce carbon emissions (currently being promoted by the USA) and a more 'top-down' method where a common global goal for reducing emissions will be agreed and then divided fairly between nations.

CBDR-RC: Common But Differentiated Responsibilities is a fundamental principle of the Convention, meaning all countries must contribute to reducing greenhouse gas emissions but recognising that industrialised and developed states can be expected to do more due to their historical responsibility for greater emissions - and their Respective Capabilities which put them in a better place to cut their emissions and help developing countries to adapt.

Divestment: Civil society campaigns to get institutions such as universities and local authorities to divest their money from fossil fuels are gaining momentum, particularly in North America and Europe. The impact this has on the UNFCCC process will be interesting, showing alternatives venues for change.

Equity: Discussions around equity have become a key part of the negotiations for a global climate deal. Equity is about each nation feeling they are taking actions that are appropriate to their responsibilities for emissions reductions, and so interpretations of CBDR-RC are key in these discussions. There are fears that theoretical discussions around equity may be used to delay progress in the talks, and the focus is now shifting to how countries can use these discussions to speed up climate action on a fair basis. Youth are also calling for intergenerational equity to be recognised in the talks.

Finance: Hailed as a 'finance COP', the Polish presidency are hoping to reach a common understanding of climate finance in Warsaw. This means the Annex II countries who are responsible for providing climate finance clarifying what money will count as climate finance, dedicated towards mitigation and adaptation projects in developing countries. Disagreement focuses on how much climate finance should come from 'new and additional' sources of money, rather than existing development aid, as part of rich countries' 2010 pledge to provide poor nations with $100bn each year by 2020 via the Green Climate Fund.

GHGs: The increase of man-made greenhouse gases in the atmosphere like carbon dioxide and methane cause the heating up of the planet. Global temperature rise causes a number of climate change impacts, such as melting of the polar ice caps, sea level rise and desertification.

HFCs: In June, despite a lack of progress at the UN's intersessional meeting in Bonn, a deal between China and America was struck outside the UNFCCC talks to phase out hydrofluorocarbons - which some scientists predicted could be responsible for at least 20% of global atmospheric warming by 2050 if action was not taken to limit them.

IPCC AR5: The Intergovernmental Panel on Climate Change is currently releasing its 5th Report (AR5), with the results of the first working group published in September. The next parts of the report will be released in March, April and October 2014. The most authoritative scientific assessments on climate change, which have been agreed unanimously by the world's governments, ends the debate over whether climate change is happening due to human activity and shifts the question to what governments should do to address the growing crisis and prevent catastrophic warming. The report makes clear that a rapid reduction of greenhouse pollution will help the world avert the worst of climate change, but without swift and significant strategies to reduce our carbon emissions, global temperatures by the end of the century are likely to exceed the 2 degree limit agreed by world leaders.

Joint Implementation (JI): As part of the Kyoto Protocol, Joint Implementation allows industrialised nations to carry out emissions reductions in another industrialised country and count it under their own reduction in emissions. The Polish presidency of COP19 has outlined its expectation to reach a decision on the continuation of JI in Warsaw.

Kyoto Protocol (KP): The Kyoto Protocol remains the only legally-binding agreement to reduce greenhouse gas emissions achieved by the UNFCCC. It covers most of the countries considered to be developed or industrialised in 1992, known as 'Annex I' countries. 2013 is the first year of its second commitment period (CP2), to which the USA, Canada, Russia, New Zealand and Japan did not sign up.

Loss and Damage: After emerging as a controversial subject at last year's conference in Doha, a package for the provision of compensation for climate change impacts is on the agenda for Warsaw. Controversy arises from the difficulty in attributing impacts directly to climate change and the lack of action on climate finance in general. A

blocked agenda at the June meeting in Bonn has prevented discussion on this topic in 2013 - and it could be a messy set of talks in November.

Majuro Declaration: In September 2013, Pacific leaders signed the Majuro Declaration for Climate Leadership to call on the international community to step up its climate ambition. The declaration was agreed at a meeting in Majuro, capital of the Marshall Islands, which was submerged in flooding in June. The US, EU, Indonesia, South Korea, Thailand and Malaysia subsequently joined Pacific Island Forum members to express support for the declaration.

NAPAs: National Adaptation Programmes of Action are plans to support the Least Developed Countries adapt to the impacts of climate change. They look at current grassroots actions and build on them to produce regional and national policies.

Observers: Observers are the actors involved in the UNFCCC who are not countries but are permitted to attend UN meetings, receive updates and support from the Secretariat, and make submissions in the UN meetings. They include intergovernmental organisations (IGOs) like UNEP and the IPCC, and the constituencies of environmental NGOs, business representatives, trade unions, youth and indigenous people.

Pathway to Peru and Paris: The next COPs to prepare and sign the global climate deal will be in Lima, Peru in 2014 (with a pre-COP promised to radically shake up the talks with greater civil society involvement in Caracas, Venezuela beforehand) and Paris, France in 2015. The Polish presidency of COP19 has said that establishing a pathway to the Paris deal is its priority for this year's conference.

QELROs: Quantified Emission Limitation and Reduction Objectives are the pledges made by Annex B countries under the Kyoto Protocol to reduce their greenhouse gas emissions. At COP18 in Doha, Australia's QELRO to reduce its emissions by 0.5% by 2020 compared to 1990 levels was ridiculed by civil society.

Russia: After the Russian delegation was prevented from raising an objection and was gavelled over as the Qatari presidency brought last year's conference to an end after overunning in discussions on the second commitment period of the Kyoto Protocol, Russia blocked progress in the June intersessional meeting in Bonn, where an agenda could not be agreed for the Subsidiary Body for Implementation (SBI) talks.

Subsidies: Raised by Connie Hedegaard last year, the push to phase out Fossil Fuel Subsidies (FFS) as a way of freeing up funds for investment into clean energy and developed country finance pledges is being discussed as part of the ADP negotiations.

Taxes: In order to make up the climate finance pledges that rich countries have committed to, innovative forms of finance are discussed at the UN climate talks. The Financial Transaction Tax (also known as the Robin Hood Tax) and taxes on bunker fuels covering international shipping and aviation are seen as practical and progressive ways to raise new and additional revenue for climate finance.

UNFCCC: The United Nations Framework Convention on Climate Change was agreed in 1992, and its Secretariat have been holding Conferences of the Parties since 1995 for the 195 countries that have ratified this international treaty. The Convention was established with the aim of stabilising greenhouse gas concentrations "at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system."

YOUNGO at the UN. Photo: © UNFCCC.

Verifiable: The USA has suggested that all mitigation targets made by countries to reduce their greenhouse gas emissions should be checked independently to see if they are Measurable, Reportable and Verifiable (MRV). Other countries including China have resisted this interference with their way of accounting for emissions.

Warsaw: Warsaw in Poland is hosting the 19th Conference of the Parties (COP19) on behalf of the Eastern European Group from 11-22 November. The President for the summit will be the Polish environment minister Marcin Korolec. Doubts have been raised over Poland's climate ambition following vetoes to EU climate action and the country's dependence on coal as a power source.

AnneXes: To recap the different categories countries are placed in within the Convention, countries that were industrialised in 1992 are Annex I countries; the Annex I countries that should provide finance are Annex II (Western world, minus post-Soviet nations); the Annex I countries who signed up to the Kyoto Protocol in 1997 are called Annex B and countries considered to be 'developing' in 1992 are known as non-Annex I.

YOUNGO: The constituency of youth NGOs was established in 2009 to give young people a voice in the talks. YOUNGO is the only constituency within the UNFCCC that has permission to perform creative actions within the conference centre, and youth climate campaigners also interact with policy-makers through policy submissions and speeches (called interventions) to negotiators in plenary meetings. YOUNGO members organise a Youth and Future Generations day at every COP as a reminder of the moral impetus for governments to take urgent and ambitious climate action, and have put on a 3-day Conference of Youth directly preceding the COP since 2005 to organise and skill-up the international youth climate movement (IYCM).

2015 deal: While finance may dominate this year's summit, progress on the global climate deal is eagerly awaited by civil society. In Durban at COP17 it was agreed that a global climate treaty with legal force would be agreed in 2015 and come into effect in 2020. Questions that need answers surround the architecture of the deal (see B for bottom-up vs top-down) and how discussions around equity will be accommodated into the deal.

The UK Youth Climate Coalition is run entirely by a team of highly motivated young volunteers, all of which are between the ages of 18-29, working together between other commitments to create a future which is happy, affordable, clean and safe. Every year we train up and send a UK Youth Delegation to the United Nations Climate Change Talks. We collaborate with other international youth organisations and call for immediate international climate action that is fair and protects the world's most vulnerable. **www.ukycc.org**

RIO CONVENTIONS CALENDAR 2014

Illustration © Spencer Wilson.

The Rio Conventions Calendar is produced to highlight the synergies between the three Conventions created at the 1992 Earth Summit, the UNFCCC, the UNCCD and the CBD. The synergy approach results from the evident need to strengthen and address the current challenges posed by the intricate relationships of climate change, biological diversity, drought and desertification on the social, economic and environmental fronts.

The 2014 Rio Conventions Calendar highlights the challenges and opportunities faced by Small Island States in the coming decades. Rich in culture, biodiversity and innovation, they are also at the frontline of climate change, land degradation and the loss of precious ecosystems.

You can pick up a copy of the 2014 Calendar inside the COP19 Conference venue. The new design will be presented to UNFCC Executive Secretary Christiana Figueres on Thursday 14 November.

AOSIS PLAN OFFERS TEMPLATE FOR CLIMATE BREAKTHROUGH

By Ambassador Marlene Moses

As the international community continues to develop the post-2020 climate change regime to be signed in Paris, it is important that we do not lose sight of the work we must do here in Warsaw, first, to lower greenhouse gas emissions in line with scientific recommendations in the short-term and, second, to set the stage for an agreement ambitious enough to protect the most vulnerable people among us for generations to come.

It is well established that emissions must peak in the next few years, well before 2020, and decline steeply thereafter if we hope to avoid the worst consequences of climate change.

The stakes are particularly high for low-lying and coastal nations, which are now experiencing life-altering impacts from record tidal surges, ocean acidification, intense storms and droughts, and, unless action is take in the next few years, face total inundation from sea level rise by the end of the century

In light of the urgency, AOSIS has submitted a proposal to complement the negotiations on the post-2020 agreement with a line of talks squarely focused on developing Mitigation Action Plans (MAPs) that provide Parties with strategies to rapidly scale up technologies and policies already proven to cut emissions.

The idea is to engage the best and brightest minds working on climate and energy issues – officials from relevant ministries, leading scientists, engineers, policy analysts, and representatives from civil society, community organizations and the private sector – in a collaborative process capable of delivering results in the timeframe required.

At this meeting, Parties should choose a list of promising policies and technologies—particularly those with development and adaptation co-benefits—for additional work to be conducted next year. Furthermore, they should give experts a mandate to develop draft MAPs for each option with detailed information on the following:

- A quantification of greenhouse gas reductions achievable;
- An analysis of the costs and other barriers to implementation in specific socioeconomic and regional circumstances;
- Strategies for overcoming barriers, including enhanced provision of financial resources, technology, and capacity building by developed countries to developing countries;
- Options for leveraging the work if initiatives and entities inside and outside UNFCCC to maximize efforts and ensuring successful implementation of MAPs, and;
- Identification of areas needing further investigation and/or technical work.

The experts should continue work in 2014 with a view to completing the MAPs before the U.N. Secretary General's Leader's Summit in 2014. We believe that our proposal shares the goals that the Secretary-General has set for the Summit and that our proposal can help him achieve those goals, namely to catalyze action in areas with high mitigation opportunities and to raise mitigation ambition.

The international community has proven time and again it can make substantial emission reductions using a combination of smart policies and readily available technologies. Our plan calls on us to do just that, but on a much larger scale and with a renewed sense of focus. It won't be easy, but the consequences of failure are unimaginable.

Ambassador Marlene Moses is the Chair of the Alliance of Small Island States.

Background photo: © J Hill www.flickr.com/photos/jhill

IT'S TIME TO DESIGN FROM THE INSIDE OUT

Juan Carlos Baumgartner from SPACE Architects explains why the construction industry is at the forefront of the green revolution

The topic of sustainable architecture and design is new in many countries, as is the case in Mexico, and while it has been possible to generate much awareness of this topic, the benefits of these types of buildings are still little known.

To understand the importance of the built environment and focus on sustainable interior design, there are two hard facts that are worth mentioning.

The built environment has a profound impact on the natural environment, the economy, health and productivity.

Buildings are responsible for approximately:

- 36% of the total use of energy
- 65% of the consumption of electricity
- 30% of the emissions of Greenhouse Gases
- 30% of the use of raw materials
- 30% of the waste that goes to the dump
- 12% of the use of potable water

It is clear that the only form of generating a sustainable society committed to caring for the environment is to involve all those responsible for designing, developing and building architecture.

Today we have access to great scientific, technological and operating advances in buildings to be used by designers, builders and owners that want to build sustainably and maximize both economic and environmental efficiency as well as wellbeing.

Space is an international architectural and interior design firm specialized in sustainable corporate architecture.

With offices in America, Asia and Europe, this firm has succeeded in positioning itself as one of the international leaders in corporate architecture always seeking solutions respectful of the environment.

For years, interior design in some countries like Mexico has been understood as a kind of secondary architecture. Architects have focused on the generation of iconic buildings in spite of, on many occasions, the user and the environment.

For years we have designed, built and commercialized architecture that has left to one side the two most important elements that should have been taken into account in these processes: people and the environment.

This approach to architecture has several negative consequences but possibly one of the most notorious is the lack of specialists in interior architecture and, of course, in sustainable interior architecture.

If in general little is really known about sustainable architecture, much less is known about sustainable interior design. Paradoxically, a large part of what is known as sustainable architecture is in reality sustainable interior design.

In many countries, one of the principal reasons little sustainable architecture is generated is due to the scarcity of architects and interior designers with knowledge of sustainable interior design.

If we analyze it, 70% of the points to credit a project with an international certification of sustainable architecture have more to do with sustainable interior design than with architecture.

The type of materials utilized, the energy savings for efficient lighting, the water savings… all these matters are resolved in the sphere of interior design.

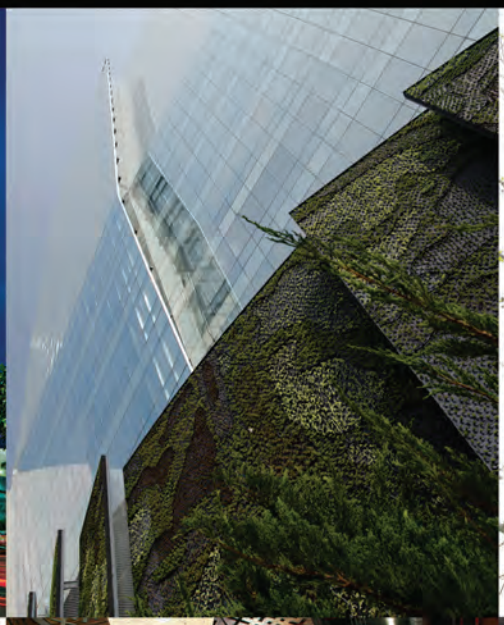
It is for this reason that in reality the future of sustainable architecture is in the understanding of sustainable solutions for interiors.

In the coming years we will see an evolution in architecture, in which we will find more and more specialists in interior design and architecture firms that will focus on interior design. There will be an increase in architecture firms designing buildings from inside out, and the building will be the result of the following formula:

Interior architecture + environment = architectural envelope

It is essential that all those involved in the production, design, construction and sale, and principally those that use the architecture, generate an awareness of the importance of interior design in sustainability; this may be an essential requirement for companies that want to transform themselves into sustainable companies respectful of the environment.

SPACE Architects
www.spacemex.com



design and sustainable architecture

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STORING RENEWABLE ENERGY

Founded in 2011, NEST AS (New Energy Storage Technology) has developed a unique and patented technology for storing energy in the form of heat. The company, based near Oslo, Norway is now piloting its technology on a small scale in several locations. NEST plans to build up its activities internationally to meet future energy challenges and scenarios with a very high share of renewable energy.

Large-scale energy storage is recognized as a key technology for enabling and supporting the growth of renewable energy systems. For the first time a low-cost solution has emerged that facilitates energy storage of any size to be installed anywhere

The challenge

Most renewable energy sources including solar and wind energy are intermittent in nature. They produce electricity not according to demand but when sun or wind is available. Being able to store renewable energy, and later supply this energy when it is demanded, is a key factor for our future sustainable energy supply. Being able to store excess renewable energy on a large scale is, in the long run, a prerequisite for phasing out fossil fuels from the energy supply mix.

Current technologies for large-scale energy storage face severe limitations; *Molten salt* is limited by relatively high cost, economy of scale (only very large plants are cost-effective), and risk of salt solidification. *Pumped hydro storage* (PHS) and *compressed air energy storage* (CAES) have severe geographical limitations, while *battery technologies* are far too expensive for large scale energy storage and *hydrogen* is still facing severe technical challenges in addition to high cost and low efficiency.

NEST's solution

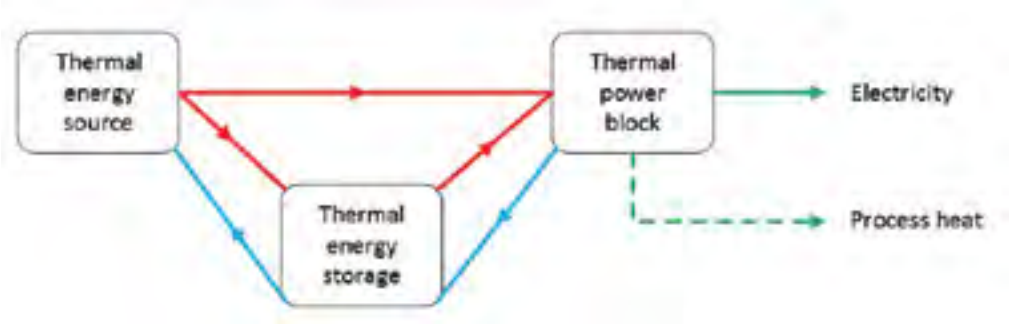
NEST AS is developing a new technology for large-scale *thermal energy storage* (TES). Fig. 1 shows the overall concept of TES. Heat from a thermal energy source can be stored and later supplied to generate electricity or process heat (steam).

NEST's novel solution is based on storing thermal energy in a specially developed type of concrete called *Heatcrete®*. Heat is supplied to, and extracted from, the Heatcrete® with a *heat transfer fluid* (HTF). The HTF flows inside heat exchangers that are cast into the concrete. NEST's solution is based on connecting together a large array of thermal storage elements (thermal "batteries"), ensuring optimal thermal performance and scalability both up and down. NEST's solution can thus serve anything from rural electricity supply with hundreds of households, to utility scale power plants serving hundreds of thousands of households.

Concentrated solar power

TES is already an established technology in *concentrating solar power* (CSP) plants, enabling them to become dispatchable energy suppliers. CSP plants capture energy from the sun as heat; this heat is used to generate electricity by way of conventional steam turbines. CSP plants may also provide energy for other crucial utility purposes such as desalination of seawater, waste water treatment or absorption cooling to

Fig. 1: Concept of thermal energy storage (TES)



name a few. *Molten salt* is currently used to store thermal energy in CSP plants. NEST's solution can substitute molten salt for a wide range of applications, and also enable CSP to be utilized within a wider range of applications where lack of suitable TES has been a significant hurdle.

Wind and other renewable energy sources

TES can also be used to store surplus energy from wind or other renewable energy sources. Surplus electricity that otherwise would have been dumped due to low demand, can be converted to heat and stored in the NEST TES system.

Later when demand dictates it, this heat can be re-converted to electricity. Although conversion loss will be substantial, it is in the same range as CAES and better than hydrogen. Moreover, the electricity used to charge the "thermal battery" would otherwise be lost and is thus principally without cost.

Potential for the future

In the next two decades renewable energy is expected to represent 50% of all new power generation installations, and 60% of new investments into power generation systems. "Moderate" predictions show that renewable electricity could constitute shares of 50-80% of the overall electricity supply mix by 2050. The future growth of renewable energy is contingent on incorporating efficient and cost-effective energy storage on a grand scale.

New Energy Storage Technology (NEST AS)
www.energy-nest.com

EUROPE MUST REGAIN ITS CLIMATE CONFIDENCE

By Nick Mabey, Chief Executive, E3G

As Europe begins to debate its climate mitigation targets for 2030 a predictable debate has reopened over its role in international climate politics.

This polarises around two extremes. Some argue that Europe must be the unilateral global leader driving a 2C agreement. Others complain that Europe's past leadership achieved nothing and other countries should lead first.

This oscillation between hubris and despair will be familiar to seasoned Europe observers. Neither approach reflects the reality of Europe's place in the world, or what is needed to protect the fundamental interests of European citizens.

Europe needs a strategy based on the realities of the world as it is, reflecting the positive and negative shifts we have seen in the past years.

> **"Europe needs to have its own distinct strategy to build the broad alliances needed for an ambitious climate deal"**

Photo: © Etienne Berthier Université de Toulouse-NASA Goddard Space Flight Center.

The world has changed since Copenhagen. The financial crisis has reduced the authority and influence of the "West", but the rising powers have not stepped up fill the gap. The result is a decline in collective leadership to tackle common problems. This is a problem for Europe in delivering its climate change objectives, but is a result of the times not European weakness.

While the geo-politics of cooperation have got harder, the economic logic of tackling climate change has become more compelling. Shale gas has changed the energy landscape in the US, but the rest of the world has experienced a huge rise in oil and gas prices driven by demand in emerging economies. With oil producing states from Saudi Arabia to Russia needing prices of $100-150 barrel to maintain government spending these prices will endure.

Meanwhile the cost of renewable energy, and energy efficient technologies like LED lights, have fallen far faster than expected as technology has improved and Chinese supply chains have expanded. Costs in many sectors are already near previous estimates for 2020-2030. Combined

EU Climate Commissioner Connie Hedegaard and UN Secretary General Ban Ki Moon ©:UN Photo Mark Garten.

with a quiet revolution in building and vehicle standards the world is far further along a low carbon path than anticipated. The global low carbon economy is already worth $3-4 trillion each year and renewable energy makes up over 40% of power investment.

Perceptions of national interests in climate action are also shifting. Superstorm Sandy and nationwide drought has fundamentally changed US views on domestic climate risks as in 2012 extreme weather events caused losses of over 1.3% of US GDP. Extreme air pollution in China has become a political issue and accelerated the shift away from coal. Chinese leaders realise they have strong national interests in ensuring the next generation of Chinese infrastructure is clean, efficient and low carbon. Countries from Mexico to South Korea are betting their industrial future on growing global markets for green and low carbon technology.

These changes have multiple causes but would have been infeasible without strong European climate action shaping global markets, regulations and diplomacy. It was German and Spanish policy which supported the creation of the Chinese solar industry, which then drove a seven-fold increase in Chinese solar deployment. In an interdependent world influence is transmitted as much by markets and "policy osmosis" as it is by diplomatic grand bargains.

Unsurprisingly a post-crisis Europe is internally-focused, but failing to lead on climate change is a luxury the EU cannot afford. Europe is highly exposed to climate risks and is surrounded by the most climate vulnerable and unstable regions in the world. There is no realistic prospect of sustainable stability and peace in North Africa, the Sahel or the Middle East in a 4C world.

Europe needs a world where global rules work and would fare badly in a system of great power competition. It is difficult to imagine a world where there was no effective international climate change regime but trade was still open and rules-based. With Paris hosting the 2015 climate negotiations, Europe can show how to build meaningful cooperation in this more complex global order.

While Europe must work with the other major powers, it needs to have its own distinct strategy to build the broad alliances needed for an ambitious climate deal. Presidents Obama and Xi may have agreed an eye-catching Summit statement on climate change this year, but it was more a signal of their inability to make progress on more contentious issues than a signal of a new "G2" order.

Confidence comes from a sense of agency in the world. Europe needs to better understand the different ways in it can shape the global environment in order to deliver its fundamental interests. This requires a clear-eyed focus on the realities of global politics; on outcomes not summit statements.

The record shows that Europe's biggest lever on global action is its domestic ambition. Europe needs to propose a domestic greenhouse gas target of at least a 50% reduction from 1990 levels if it is to keep a realistic prospect of a 2C future in sight. This offer must be backed by significantly more political investment in climate diplomacy at leader's level if it is to shape a climate of ambition toward the UN Climate Summit in 2014 and Paris in 2015.

There are no risk-free strategies to influence in a multi-polar world where it is always easier to block than to build, but only by taking bold moves to shape global politics is there any chance of Europe can deliver on its core interests.

Nick Mabey, Chief Executive, E3G
www.e3g.org

E3G

LOSS AND DAMAGE: NO PLACE TO HIDE

By Saleemul Huq

In recent months, the world has seen some significant loss and damage from climate related events

These have included losses of nearly US$100 billion in the US from Hurricane Sandy in the northwest coast and droughts in the south and mid-west, to over 10 billion from floods in Germany and many other parts of the world.

In northern China floods have caused loss of several hundred lives, and entire towns have been washed away.

When these events occur in developed countries the losses tend to be large in monetary terms but low in human lives lost.

When they occur in poorer developing countries the numbers of human lives and livelihoods lost are generally larger than the monetary loss and damage.

Nevertheless, both developed as well as developing countries are being affected quite severely.

Severity

Several recent scientific publications, including the special report on climate extremes of the Intergovernmental Panel on Climate Change (IPCC) as well as a World Bank report (called *Turn Down the Heat*), have shown that the severity of such climatic events in future is likely to increase dramatically due to human induced climate change.

A more recent study looking at potential loss and damage in coastal cities around the world estimated that in New Orleans and New York alone the costs may go up to US$1 trillion over this century.

While every country has some national level mechanism in place to assess loss and damage and sometimes also provide compensation (either through private insurance or public purse), they are becoming strained, with insurance companies no longer willing to provide insurance against floods and droughts in many developed countries.

In some cases, where the country is unable to cope by itself, the international community steps in to provide funding. Although such funds are not called compensation, they are, nevertheless, given because of the sense of shared responsibilities between rich and poor countries.

COP 18

In the last Conference of Parties of the United Nations Framework Convention on Climate Change (UNFCCC) held in Doha, Qatar, last December, the parties agreed for the first time to look at options for a global mechanism to address loss and damage from climate change.

The developing countries, led by the small island developing states (SIDS) and least developed countries (LDCs), have been arguing for some time for an international mechanism on loss and damage , which has been resisted by the rich countries (largely out of fear that it will give rise to demands for compensation based on liability).

However, it is time that the developed countries realised that loss and damage will not be confined to poor countries only but that even the rich countries will suffer major loss and damage if temperatures continue to rise. Hence, it is their own interests to engage constructively with the poorer more vulnerable countries in trying to address this topic.

Thus, at the next conference of parties (COP19) to be held in Warsaw, Poland, in November this year, they should bring a positive response to the demand for an international mechanism on loss and damage and support the vulnerable countries in this demand.

One area for mutually beneficial exchange of knowledge and information between developed and developing countries is research on loss and damage.

A good example of this has recently been set by the government of Japan, which has allocated nearly US$1 million for a research programme on loss and damage in the Asia Pacific region. Other developed countries could follow Japan's example.

It is high time to move from a confrontational approach to a cooperative approach on loss and damage.

The writer is a Senior Fellow in the IIED's Climate Change Group and Director, International Centre for Climate Change and Development, Independent University, Bangladesh, Dhaka.

PANTOMIME TO TRAGEDY: WAS 2013 THE YEAR CLIMATE POLITICS GOT REAL?

By Christopher Shaw

Chris Shaw argues that the two degrees target is contributing to climate apathy among world leaders

Up until the late summer of 2013 climate policy was, in the English speaking world at least, nothing more than a polite parlour game.

Once it became apparent, circa 1988, that the speed and extent of the industrial transformation of our atmosphere could no longer be ignored, charismatic political figures set about showing the world they were taking the issue seriously.

In the UK the Prime Minister has engaged in symbolic photo shoots riding skidoos across the Arctic ice. In the US, Vice president Al Gore made a film about climate change, and Obama has spoken about the need for action.

Even George W. Bush, in explaining his decision to not ratify the Kyoto protocol, still felt it necessary to play the game, and stressed the need for the US to "diversify away from fossil fuels."

The then Australian Prime Minister Kevin Rudd, having declared climate change "the greatest moral, economic and social challenge of our time" signed Australia up to the Kyoto Protocol in 2007.

However, his move from this empty symbolism into real climate policy proved his downfall; when Rudd attempted to impose a resource tax, the mining companies fought back and Labour, desperate to appease their paymasters, promptly replaced him with Julia Gillard, who set about reforming the resource tax into just another toothless piece of climate legislation.

False hope

Most climate policy of the past 25 years has the same kind of relationship to the radical responses demanded by the science as a charades mime has to the film or book which the players are being asked to guess.

The academic Ingolfur Bludhorn has described this simulacrum of meaningful action as 'symbolic politics'.

He argues that symbolic politics, whilst as old as society itself, has reached new levels of significance as the challenges facing humanity become more complex. But, he suggests, symbolic politics can only get us so far. At some point reality catches up with the symbolism, and the chickens come home to roost.

The end game for symbolic climate change politics has arrived. But rather than replacing the pretence of symbolic climate politics with meaningful policies, we are seeing the reverse, the rejection, in the Anglo Saxon world at least, of climate politics in all its forms, symbolic or otherwise.

The new Australian Prime Minister has consigned climate change to the dustbin of policy making.

In September George Osborne, UK Chancellor of the Exchequer, proclaimed that he didn't want the UK to be at the forefront of efforts to tackle climate change, (an amusing statement, a bit like my Gran saying she doesn't want to compete in the Olympics 100 metres final.)

Then, on Monday 30 September, following the release of the IPCC's Fifth Assessment Report, the UK government's Environment Secretary, Owen Patterson, told delegates

US President Barack Obama directed the EPA to take a tougher line against coal-fired power plants in 2013.

at the Conservative Party's annual conference that we should just accept the climate has been changing for centuries, and any further increases in temperature were likely to be quite modest and have a number of beneficial impacts.

Two degrees

But why now? Why at the very point that the IPCC have removed any doubt about the anthropogenic nature of climate change would Western decision makers choose to abandon all pretence that they were ever serious about climate mitigation?

I would argue it is because the ultimate symbolism of climate policy now demands a response; the two degree dangerous limit idea.

The promise that climate change won't become dangerous anytime soon can no longer be deployed to forestall the need for radical action to reduce emissions. That, after all, is what environmental limits are for; not to limit industrial activity, but enable it.

Following Fukushima, safe levels for radiation exposure were increased so that children could go back to schools that, under the previous safety levels, were declared out of bounds.

Aeroplanes were grounded across Europe in 2010 because there was no such thing as a safe level of volcanic ash for planes to fly through. It therefore became necessary to define a safe level so that flights could recommence.

And so it is with the two degree dangerous limit – it was only ever intended to allow for the continuance of business as usual in the face of the certain knowledge that industrial activity was driving atmospheric concentrations of greenhouse gases to levels higher than anything in the history of human existence.

The search for energy substitutes was meant to have delivered a solution by now. It hasn't, and time is up; two degrees of warming cannot be avoided under business as usual scenarios.

The game of charades is now over. It is decision time – capitalism vs observance of the two degree warming limit or, in the very optimistic words of Buckminster Fuller, 'utopia or oblivion'.

The last month of policy announcements show our political class have made their choice.

Christopher Shaw is an inter-disciplinary researcher at the University of Oxford with eight years of experience in research in the area of climate policy, social geography, public engagement and socio-technical transitions. Follow him @kalahar1

Invitation for Nominations
PSIPW 6th Award (2014)

Prince Sultan Bin Abdulaziz International Prize for Water

Recognizing Innovation

Nominations open online until 31 December 2013

Inaugurated in 2002 in Riyadh, Saudi Arabia by HRH Crown Prince Sultan Bin Abdulaziz, PSIPW is a leading scientific award bestowing five distinctive prizes bi-annually to recognize water-related innovation all over the world.

The Prizes: First, there is the **Creativity Prize**. Worth US$ 266,000 (1 million Saudi riyals), this prize is awarded to an innovator or pioneer for work that can rightly be considered a breakthrough in any water-related field. The work might be a body of reseach, an invention, or a new patented technology. Universities, university departments, companies, and other organizations may nominate worthy individuals and teams of researchers for this prize.

Then there are four **Specialized Prizes**, each worth US$ 133,000 (1/2 million Saudi riyals), covering all aspects of the water research landscape. Researchers and organizations may nominate themselves for any of these four prizes.

www.psipw.org email: info@ psipw.org

RTCC 2013 CLIMATE CHANGE AWARDS

COP19 Warsaw

RTCC is delighted to announce its inaugural Climate Change Awards, celebrating the achievements of the leading businesses and individuals from across the green economy. As the countdown continues to the 2015 UN conference where a global emissions deal could be agreed, the need for private sector leadership is stronger than ever before. The 2013 awards, which will be presented while international climate change talks in Warsaw are taking place, will reward green thinking in a global economy that demands short term success.

Pelamis Marine Power. *Photo: © Jumanji Solar.*

Suwon City *Photo: © Justin Ornellas.*

Categories:

- Green business of 2013
- Green city of 2013
- Green University of 2013
- Sustainable technology firm
- Electric Vehicle innovator
- Wind energy solutions provider
- Solar energy solutions provider
- Marine energy solutions provider
- Waste management firm

The awards will be presented on Wednesday 13 November at the Climate Change TV Studio

Armadillo T car. *Photo: © Kaist. www.kaist.edu*

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STEPPING UP THE PACE: CITY-LEVEL CLIMATE ACTION

Author: Maryke van Staden, Low-carbon Cities Program Manager,
ICLEI – Local Governments for Sustainability, World Secretariat

A clear and worrying picture is presented regarding human influence on climate change, as outlined in the first part of the Fifth Assessment Report (AR5) of the Intergovernmental Panel on Climate Change (IPCC)[1] released on 27 September 2013, yet, all is not (yet) lost. Many cities and sub-national governments are responding to this global challenge. By setting greenhouse gas reduction targets, outlining plans for local climate action, and implementing a wide range of activities that reduce emissions – which in many cases also have additional benefits such as stimulating the local economy and promoting sustainable development – local climate action is part of the way forward in effective climate change mitigation.

Key event, foundation of a process

Leaders of sub-national governments around the globe came together at the World Mayors Summit on Climate Change in Nantes[2], France on 27 and 28 September 2013, to affirm their commitment to scale up climate actions, but also to urge engagement with the global level on climate change, and call for enhancing access to finance. The Nantes Declaration of Mayors and Subnational Leaders on Climate Change was adopted with the support of over 50 mayors from 30 countries, and more than 20 regional and global networks of local and subnational governments. Together, they represent a substantial number of citizens around the globe.

This marks the start of a new phase for the Local Government Climate Roadmap, an advocacy process aimed at recognizing, engaging and empowering local governments within the global climate regime. ICLEI – Local Governments for Sustainability (ICLEI) is the Roadmap facilitator, and, having led cities and their networks to a successful 1st phase of the Roadmap where recognition was obtained of sub-national governments as "governmental stakeholders" in the international climate negotiations, is now paving the way for more ambitious local climate action.

This second Roadmap phase calls for enabling framework conditions that will support and encourage local climate action – with financing a key cornerstone. Among the innovative features of the renewed Local Government Climate Roadmap is the creation of a "Friends of Cities" group at the United Nations Framework Convention on Climate Change (UNFCCC). This is an offer from the Local Government and Municipal Authorities (LGMA) Constituency, led by ICLEI, to the Parties (national governments) to pro-actively explore and enhance collaboration with local and subnational governments in their respective countries.

Link to international climate negotiations

Without good national-local cooperation it is unlikely that ambitious global climate targets can be met. Without constructive dialogue and solid partnerships hope in remaining below the two degrees Celsius warming target is diminished. The Local Government Climate Roadmap 2013 to 2015 – as an advocacy process – aims to help pave the way to reach a successful global political framework to be realized at the UN Paris Climate Conference in 2015.

The Polish Vice-Minister of the Environment, Beata Jaczewska, said that the Nantes Declaration will play an important role in the upcoming Convention of the Parties (COP) conference, to be held in November 2013 in Warsaw. The Polish Presidency will convene the first ever "Cities Day" that will bring together Ministers and Mayors during the high level segment on 21 November 2013. This is an unprecedented development, outlining a focused role on cities in the international negotiations – to explore ways to enhance action to lead us to globally effective results in combating climate change.

"Walking the talk"

However, political discussion and declarations alone are not enough. In Nantes, Farhad Suri, Mayor of South Delhi, India, recalled the words of Gandhi: "Our future

Photo: © www.flickr.com/photos/adeupa

is shaped by what we do today." These true words are reflected in the spirit of the Local Government Climate Roadmap, calling on all local governments to commit to and engage in climate change mitigation and adaptation. A key step in this process is also to report: to share commitments, action plans and outline climate action in the reporting platform created for local governments - the carbonn Cities Climate Registry (cCCR)[3].

We know that climate change mitigation is essential in order to reduce the release of harmful emissions. We also know that this can very effectively be done in cities. Action is needed: reducing energy waste (energy conservation), optimizing energy efficiency and switching to renewable energy resources – thereby moving away from burning fossil fuels and using energy more wisely, regarding it as a valuable commodity. This is an approach that can be taken by all cities around the globe, even in emerging economy and developing countries. These are the countries with fast growing urban areas, where it makes all the more sense from a political, security, economic, social, and environmental perspective to focus on a sustainable, low-carbon development pathway. The Urban-LEDS project[4] illustrates this, following a process that guides growing cities in Brazil, India, Indonesia and South Africa, on a low-emission development strategy.

Climate change adaptation is also a reality which city governments need to deal with – in all parts of the world. Mathew Appelbaum, Mayor of Boulder, Colorado, USA, spoke of the devastation of his city by extreme weather, and of the urgent need to turn words into action: "We recently experienced an incredible flood, in which a year's worth of rain fell in four days. Events like the one that struck Boulder are becoming more common all around the globe. It is clear cities are on the frontlines - we are suffering the impacts of climate change. Because of that we have to be leaders and mitigate and adapt in the face of climate change. I am delighted and proud to support the Nantes Declaration."

Next steps

Under the patronage of Francois Hollande, President of France and with the support of French Prime Minister Jean Marc Ayrault, the World Mayors Summit on Climate Change 2013, Nantes was a success. Yet it is also only one stepping stone, albeit an important one. It is a foundation for the new phase of the Roadmap, which will accompany the UN negotiations to adopt the necessary climate regime to respond to the climate threat.

The focus is now on identifying appropriate gateways for cities to access global financing mechanisms. In addition, the debate has been started how to link the Nantes Summit results to the larger political context of the outcomes of Rio+20 and the design of global sustainable development in 2015, as well as revisiting the disaster risk reduction strategies in 2015 and Habitat III in 2016. A coherent approach is recommended towards sustainable urban development – assisting a holistic and integrated transformation to low-carbon, climate-resilient communities.

The approach offered by partners of the Local Government Climate Roadmap: "Together we are stronger!".

1. www.ipcc.ch/report/ar5/wg1/
2. http://www.iclei.org/worldmayorssummit.html
3. http://citiesclimateregistry.org
4. www.urban-leds.org

HOW BUENOS AIRES DEVELOPED AN EFFECTIVE CLIMATE ACTION PLAN

Argentine capital outlines its innovative Climate Change Action Plan and explains how it has engaged citizens

In a world where the population has become urbanized by almost 70%, where the number of megacities has grown considerably and unplanned growth of large cities creates pollution problems, it is vital to consider a change through local initiatives. That is why, Buenos Aires City Government assumes responsibility for the GHG emissions generated by its 3,000,000 inhabitants and nearly 3,200,000 commuters.

Considering Buenos Aires is one of the largest cities in Latin America, the Government has decided to embark on a long-term effort to develop a comprehensive climate change adaptation strategy and reduce its contribution to global warming.

Based on the GHG emissions inventory, Buenos Aires set the goal so as to reduce 30% of emissions below 2008 levels by 2030. Besides, taking into consideration past events and future forecasts, the Government considers flood risk prevention and emergency response as the main priorities.

In the words of the Mayor of Buenos Aires Mauricio Macri: “in compliance with the objectives established at the start of the legislative year, I would like to highlight

Area:	202 km^2 organized in 48 neighborhoods in 15 communities
Stable Population:	2,891,082
Commuters:	3,200,000
Number of Vehicles in the City:	1,022,000 cars
Bus Fleet:	9,700
Subway Network:	6 lines, 55 km
BRT Network:	12.5 km (25.5 km in construction stage)
Bike Lane Extension:	100 km
MSW:	1,3kg/inhabitant/day

that the City has passed the Climate Change Act in September 2011, an action that confirms the decision of this government to grant climate change the importance it deserves, thus transforming it into a real and crossdisciplinary state policy".

Adaptation and mitigation

The city is currently undertaking different actions in order to reduce GHG emissions and reduce risk and vulnerability.

In this framework, the government is measuring the way we use the energy in public buildings, introducing more efficient street lighting technology, promoting efficient design and construction, incorporating renewable energy sources in the Environmental Protection Agency building, expanding both the BRT and the subway network, encouraging sustainable mobility as defining pedestrian priority streets and promoting the use of bicycles. The city is also working hard on measures to reduce municipal solid waste disposal by promoting responsible consumption, strengthening separate collection while increasing the capacity of waste treatment and recovery recyclables.

In terms of Adaptation, the biggest challenge for the city now lies in the increase of temperature levels as well as the increased frequency and intensity of extreme storms and rain events.

To reduce vulnerability and risk of its inhabitants, the strategy includes the addition of a permanent meteorological monitoring network, the maintenance of the rainfall drainage system, the increase of green space, the use of lakes as flood buffers, the relocation of settlements in vulnerable areas, and an important Hydraulic Plan in order to prevent floods on the largest basin of the city; as well as the recent creation of an Emergency Response Center, designed with the latest technology allowing the city to coordinate a rapid and integrated response in case of a disaster situation.

International Networking

Bearing in mind the importance of local initiatives to tackle climate change, while understanding the need to go beyond this first step, the government strongly believes in the strength of city networking.

In this framework, the city is a member of the C40 group, encourages information disclosure and transparency through the *Carbon Disclosure Project* and Carbonn registry and is part of the group testing the *Global Protocol for Communities*. Stressing the importance of fostering city partnerships, in June 2012 during the Rio+20 conference, the Mayor signed along with their counterparts from Mexico City and San Pablo a joint statement showing the commitment of its leaders towards the challenges of global change. The city also participated in a preliminary stage of the World Bank *Mayors Task Force* initiative so as to strengthen the Urban Risk Assessment.

Buenos Aires Ciudad

DOES CLEAN WATER ALWAYS HAVE TO COME AT A COST?

Pak Oasis explains how its solar-powered ultrafiltration plant in Karachi can make water purification less energy intensive

One of the biggest challenges facing our world today is balancing the competing demands of present and future generations.

On June 28, 2010 the UN General Assembly declared that access to clean water and sanitation is a human right for all people – an announcement that was warmly welcomed by Pak Oasis, one of Asia's leading water engineering companies.

Yet three years on, and a full thirteen years since the Millennium Development Goals were launched, there are still some 780 million people who lack access to clean drinking water and more than twice as many with no access to basic sanitation facilities.

There has never been any doubt at Pak Oasis that every member of the world's population deserves these most basic of human rights. However, with a growing global population – set to hit nine billion by 2050 – and water scarcity also on the rise, we must ask, can our planet cope?

Respecting and nurturing the environment, and reducing the effects of man-made climate change, must be as high a priority as helping those most in need today. The only way to provide the necessary investments to lift this generation out of water poverty, without irreparably damaging the chances of future generations, is a much greater utilization of renewable and sustainable energy sources in the implementation of our goals.

Previously, the main problem in the production of drinking water, most particularly in the desalination of seawater, was that the cost was far too high when achieved using renewable energy. For seawater desalination– increasingly relied upon to provide drinking water because of the rising global scarcity of freshwater – half of the operating cost comes from energy use.

Pak Oasis – in partnership with the industry's leading technology companies, such as Dow, Grundfos, FSI, Pentair and LORENTZ – has been pushing back, searching for technological and operational improvements to constantly reduce the energy requirements needed to purify water or desalinate seawater.

According to the International Renewable Energy Agency (IRENA), renewable energy-powered desalination is now able to compete with conventionally-powered desalination in remote areas where the energy transmission costs are high. And while it may still be more expensive in less remote areas, IRENA asserts that it is 'expected to become economically attractive as the costs of renewable technologies continue to decline and the prices of fossil fuels continue to increase'.

Pak Oasis' first entirely solar-powered Ultrafiltration plant – a process which removes bacteria and viruses from non-saline water – was established in Karachi, Pakistan, last year. The lessons learned from this successful project enabled Pak Oasis to proceed to build Pakistan's first

Pak Oasis is a solutions-driven, multinational water company, which specializes in water filtration and sanitation treatment systems across the globe.

Pak Oasis is investing in solar solutions to power our plants (Photo: © Pak Oasis)

We're investing in hybrid power techniques to filter water (Photo: © Pak Oasis)

ever solar-powered desalination plant (based on reverse osmosis technology) a few months later. Both of these plants were the first of their kind in Pakistan.

With the successful completion of both, Pak Oasis is now in the process of converting or building over 700 Ultrafiltration and Reverse Osmosis plants which will operate either entirely on solar power, or on a hybrid system powered during the day by solar energy and alternative sources at night.

At Pak Oasis we are immensely proud of the innovative solutions we have achieved at the nexus of the water and renewable energy industries. The energy savings achieved in these projects are immense, while the reduction in carbon dioxide emissions in the atmosphere will run in to the hundreds of thousands of tons.

As important, however, is the number of people who now have access to reliable and safe drinking water – to their most basic of human rights – and that this has been achieved without sacrificing our planet's and their children's future.

Pak Oasis
www.pakoasis.org

We're powering our filtering plants by renewables (Photo: © Pak Oasis)

ABRUZZO HAILS EU'S COVENANT OF MAYORS INITIATIVE

The Italian region of Abruzzo lies in central Italy, 50 miles east of Rome. It has pioneered the development of clean renewable sources such as wind, solar, biomass and hydrogen

The Covenant of Mayors is a voluntary initiative, launched in January 2008 by the European Commission. The European cities that have chosen to join undertook to prepare a Plan of Action to reduce their emissions of CO2 by 20% by 2020, through policies and local projects that increase the use of renewable energy sources.

As previously stated by the President of the European Commission José Manuel Barroso, we should not underestimate "the leading role of cities and regions in transforming the political agenda for the climate into action". The Covenant of Mayors appears therefore as a major initiative that is based on the sharing of experiences and the ability to pool resources and make investments that have a tangible impact on people's lives. Here comes the need for a bottom up strategy, from individuals and individual communities to achieve a strong, practical impact in the fight against climate change.

On May 4th 2010 in Brussels, Abruzzo Region joined the Covenant of Mayors as "Supporting Structure" for the promotion, support and development of the production of energy from renewable sources, energy saving and sustainable mobility, in line with the policy objectives of the European Commission.

Abruzzo is an outstanding example at European level for exploiting the correspondence between the objectives of the Covenant of Mayors and those of POR-FESR 2007/2013, Axis II "Energy" putting at the disposal of local authorities a budget of approximately € 35 million for the implementation of the measures provided for in the Covenant of Mayors through the energy efficiency of public buildings (mainly schools) and the production of energy from renewable sources.

The immediate activation of a Control Room with the participation of Regions, Provinces and ANCI has made it possible to regulate the start of the program as well as ways and times for both the provision of resources for the implementation of interventions. This way municipalities have the main role of agents of change. Every mayor can directly plan interventions in the energy sector at the municipal level referring to 2020 objectives with the direct involvement of every single citizen.

Abruzzo Region population amounts to 1.34M. The territory includes 36% of Protected Areas: three National Parks, one Regional Park, fourteen National Environment Reserves and seventeen Regional Environment Reserves.

The Covenant of Mayors has produced extraordinary results to date in Abruzzo:

- All 305 municipalities in the region implemented concrete actions of the Covenant of Mayors actively involving their technical facilities and the population, implementing also IBE and SEAP;
- About 700 actions carried out throughout the region, focusing on a priority basis the energy efficiency measures on schools;
- More than 700 energy efficiency actions carried out in the schools of the region;
- All schools are involved in a multi-year activity, through Energiochi Project, teaching to students energy efficiency and RES actions;
- The entire population was informed on issues on sustainability thanks to the Covenant of Mayors.

The major activities of Abruzzo Region in the context of the Covenant of Mayors has been recognized as European BEST PRACTICE with prestigious awards, at national and international level.

In addition to the positive results at European level, Abruzzo's achievements have been recognised at the last two UN climate conferences in Durban and Doha, and also through its membership of FEDARENE and AER.

Regione Abruzzo
www.regione.abruzzo.it

Win - Win Strategy in Abruzzo Region

implementing EU policies through the bottom-up approach and multilevel governance

35 Million € ERDF

618 Interventions

6 Months realization

4 Provinces

305 Municipalities

The Covenant of Mayors models as Best Practice

All 305 municipalities in the Region joined the CoM. The Region allocated ERDF 2007-2013 funds, axis II Energy, to the implementation of the SEAP interventions. A Sustainable Energy Action Plan (SEAP) is the key document in which the Covenant signatory outlines how it intends to reach its CO_2 reduction target by 2020. It defines the activities and measures set up to achieve the targets, together with time frames and assigned responsibilities.

Covenant of Mayors

European Union
European Regional Development Fund
Investing in your future

ARAEN

www.regione.abruzzo.it

INNOVATION IN WASTE MANAGEMENT IN PERU

Rising waste levels are a critical concern in developing countries around the world, causing pollution and localised health impacts. The answer doesn't always lie with governments

Petramas is a Peruvian company that provides services in waste management, in a country considered as the third growing economy in the region. These services include urban cleanliness and final disposal and they are offered to local governances in Lima.

We have developed UN-certified Clean Development Mechanism (CDM) projects and renewable energy from the collected rubbish. We employ 1,500 people, with all the social benefits according to law.

Waste companies may seem unlikely green leaders, but look at the facts. Our country produces nine million tonnes of trash a year.

From this around of 30% goes to a landfill, 6% is recycled and more than 64% goes to garbage dumps, the river, the sea, damaging the ground, water and air, reducing the life expectancy and contributing to the global warming.

Capital case-study

In the case of Lima, twenty years ago, before Petramas entered the final disposal market, 80% of garbage went to dumps, where it was typically used to feed pigs, which then were given as food to people.

From a general view, this situation occurs because the problem that faces many governments in the developing world is the low rate in payment of taxes, which reduces the funds for urban cleanliness services and an appropriate final disposal of the trash recollected.

Dr. Jorge Zegarra, Chief Executive, Petramas

Based in Lima, Petramas is a waste company focused on improving its local environment and generating clean energy from the landfill sites it manages

In these circumstances, Petramas introduced a series of solutions. One is an attempt to dramatically reduce of the price per tonne of rubbish, from US$ 12 to less than US$ 4 thanks to an innovative management method in landfills.

This now means landfill disposal can be an affordable option for the localities and also provide power, due to methane recovery, which is used to generate electricity.

Waste mountains

Petramas' landfills receive around 6,000 tonnes of garbage per day. This quantity of garbage represents around 70% from the total made in Lima, the fastest growing city in Peru.

Greenhouse gases produced by the anaerobic decomposition of garbage are captured by a system of pipes, avoiding the release to the atmosphere.

The gas is cleaned and is then used as a fuel for engines that produce clean energy.

Social impacts

During its visit to Huaycoloro Landfill, World Bank director Marcelo Giugale pointed out that the main cause of child disease is pollution, and the existence of garbage dumps makes this problem worse.

Entire families relying on recycling or pig breeding live in the middle of rubbish, with critical consequences for their health and long-term poverty levels.

Facing this problem, Petramas has undertaken social changes specially for the people who were considered social outcasts.

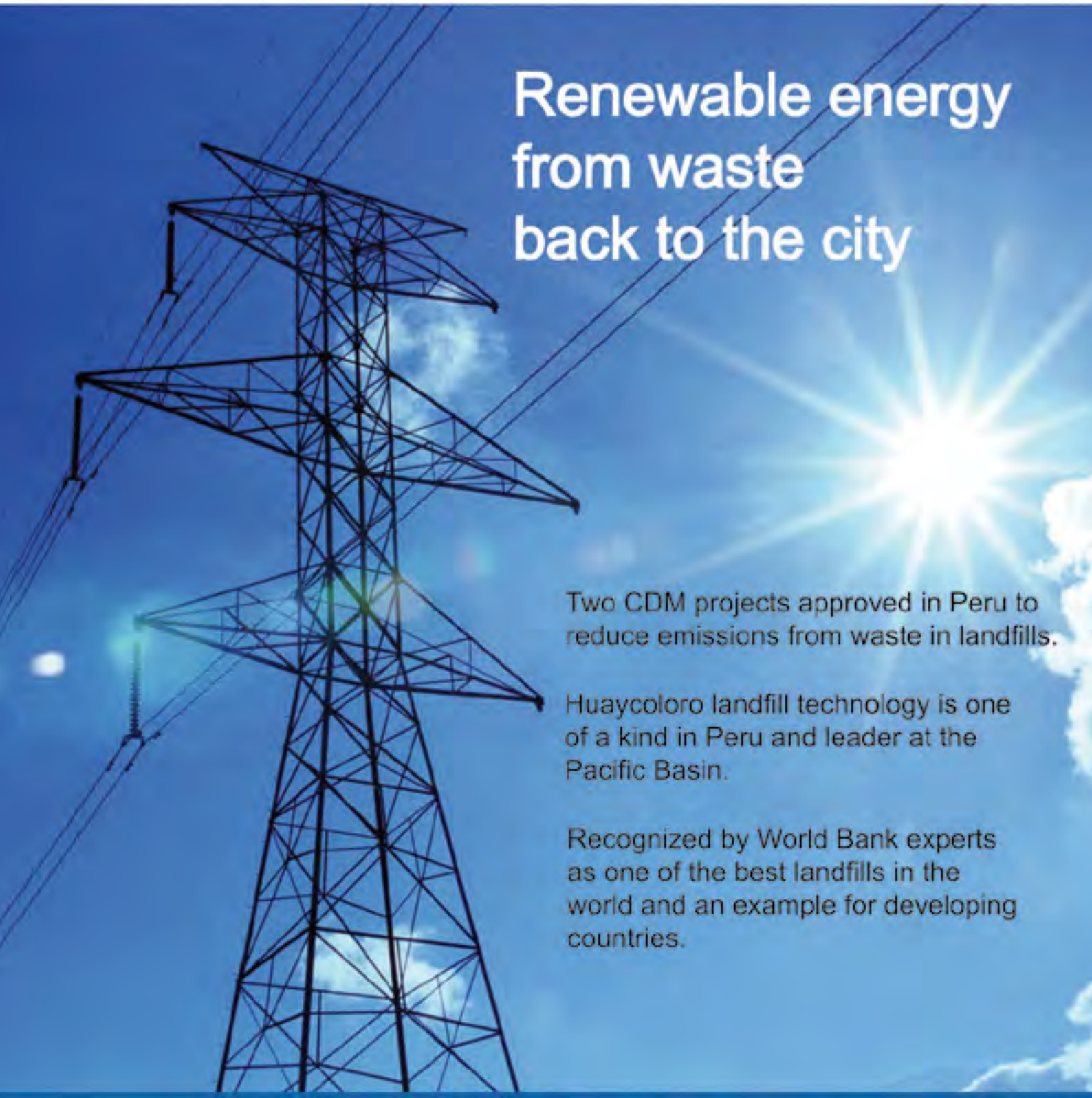
Now they are emergent workers who can recycle in landfills, under regulated conditions that protect their integrity.

We have recycling associations and families that have formed enterprises and will in time see their revenues increase.

Petramas
www.petramas.com

Petramás

Waste management and renewable energy



Renewable energy from waste back to the city

Two CDM projects approved in Peru to reduce emissions from waste in landfills.

Huaycoloro landfill technology is one of a kind in Peru and leader at the Pacific Basin.

Recognized by World Bank experts as one of the best landfills in the world and an example for developing countries.

www.petramas.com

Tel: +51 +1+419 9300/ 419 9301

E-mail: informes@petramas.com

Av. Tomás Marsano 2813 Piso 8, Urbanización Higuereta, Santiago de Surco. Lima- Peru

CATALONIA OUTLINES 2013 CLIMATE CHANGE STRATEGY

Photo: © M. Cebolla/Archive PNDE.

Leading European regional body explains how it seeks to include public in major adaptation and resilience decision making

On 29 April 2013 the European Commission launched the EU Strategy on Adaptation to Climate Change. Adapting to climate change, such as greenhouse gas mitigation, is not only an environmental problem; it also has an economic dimension. It must therefore be treated as a whole by the environmental authorities and those in charge of economic policy. In fact the cost of not adapting to the impact of climate change in Europe has been assessed at 100 million euros by the year 2020. This huge figure is the economic appraisal made by the European Environment Agency, taking into account flooding, the effects on coastal areas, the energy required for cooling and heat wave mortality.

Vulnerability to environmental threats, along with their identification and magnitude according to the different European biogeographical regions (Mediterranean, Alpine, Boreal, Continental, Atlantic, etc.) largely depends on the degree of exposure and on both physical and socio-economic sensitivity. Adaptation therefore requires local (cities), regional and national strategies to meet the challenge posed by climate change successfully.

Far from being mere guidelines for Member States, the EU strategy establishes duties and deadlines for their undertaking. So, for example, by 2017, all Member States must have adopted an adaptation strategy, or, by 2020, cities of over 150,000 inhabitants must have adopted an adaptation strategy.

Regional action to adapt to climate change: Catalonia

Aware of this fact, and in advance of the established deadlines, Catalonia approved the Catalan Strategy for Adapting to Climate Change (ESCACC) in November 2012. This strategy highlights the Pyrenees and the Catalan coast, particularly the Ebro Delta area, as the geographical areas that are most vulnerable. In the Pyrenees, the anticipated increase in average temperature is +2.5ºC by the middle of the century. With respect to the coast, the rise in sea level, significant in the Ebro Delta, the increase in extreme weather phenomena (storms, high winds, floods, etc.), the change in wave patterns, and the concentration of population and infrastructure in this area, are factors that increase the vulnerability of the coast.

The strategy analyses a total of 11 natural systems and socio-economic sectors. It should be mentioned that water is the most vulnerable resource having direct consequences for other sectors. The forestry sector has the most knowledge on the impact of climate change, whereas the socio-economic sectors either do not know about adaptation or do not include it in their future strategies.

Of the 63 impacts described in the strategy as a result of climate change, 32 are impacts already observed (major increase in temperature, increase in sea level, variability in precipitation, changes in agricultural production, fewer days with snow, etc.). Thus, climate change in Catalonia is not imagined, it is a reality that must be recognised and faced. The ESCACC thus includes a total of 182 adaptation measures to reduce vulnerability to the impact of climate change: 152 specific measures for the various sectors/systems and 30 cross-cutting measures related to R&D&I, knowledge transfer and training.

Finally, it is important to note that, given the eminently local component of adaptation to climate change, public participation is essential, either at an individual level or through civil organisations and associations. Throughout the process of drawing up the Catalan strategy, particular attention was paid to this aspect and, as a result, over 428 proposals were received. Such efforts must continue if we wish to achieve the objective of building a society that is more resilient to climate change.

www.gencat.cat/canviclimatic

The Catalan Office for Climate Change

The Catalan Office for Climate Change is the Government body in charge of promoting the definition of a Catalan policy on climate change agreed by all stakeholders and assessing its implementation in order to reduce the vulnerability of Catalan society as a whole, while fostering its skills.

The Catalan Office for Climate Change

LAKE CHAD'S FIGHT FOR ITS VANISHING WATERS

Photo: Chad drought UN Photos © Eskinder Debebe

Promoting an integrated approach to agriculture in the context of climate change

An integrated approach

Lake Chad is the largest, fresh water reservoir in the Sahel region of Africa. It is the fourth largest lake in Africa after Lake Victoria, Tanganyika and Nyassa respectively. The resources of the Lake and its basin provided the subsistence for the livelihood of more than 30 million people, most of whom are farmers, fishermen and livestock breeders.

Rain-fed and floodplain agriculture constitute the second largest source of income after fishing activities in the Lake Chad basin. Irrigated agriculture is the third largest contributor to the economy of the basin. Natural conditions in the Lake Chad basin have favored the promotion of irrigated agriculture through the development of hydro-agricultural schemes with partial or total control of water.

As of 1995, 213,400 hectares (ha) were planned for irrigation, but only 33,824 ha developed with only 23% of the schemes functional. Recent figures obtained in 2008 give a total of 153,999 ha under irrigation. The most important irrigation schemes are found mainly in Nigeria which alone accounts for 72% of the schemes.

In order to improve sustainable management of the natural resources of the Lake Chad basin, the LCBC and its principal stakeholders have conducted studies and developed tools aimed at integrated management of natural resources of the Lake Chad basin.

i) Lake Chad Vision 2025

The LCBC has developed a common shared vision that is in conformity with the aspiration of the people of the Lake Chad Basin and in line with the Africa Water Vision 2025. The Lake Chad Vision 2025 states:

The Lake Chad Region would like to see by the year 2025 the Lake Chad – common heritage – and other wetlands maintained at sustainable levels to ensure the economic security of the freshwater ecosystem resources, sustained biodiversity and aquatic resources of the basin, the use of which should be equitable to serve the needs of the population of the basin thereby reducing the poverty level.

ii) Water Resources Management at Basin Level

Recognizing that water is central to the sustenance and productivity of the environment and sustainable agricultural development, the LCBC has instituted the implementation of IWRM as a guiding principle in the management of the natural resources of the Lake Chad Basin. These are:

- Management of resources per Basin unit;
- Taking into account of the economic and social value of water;
- Cross-sector and concerted management;
- Environmental sustainability;
- Participatory governance.

The LCBC has been reforming itself to play the role of coordinating the implementation of integrated natural resources management for sustainable development in the Lake Chad Basin. Diagnosis studies have been undertaken and recommendations for harmonization of policies for sustainable agricultural development were identified.

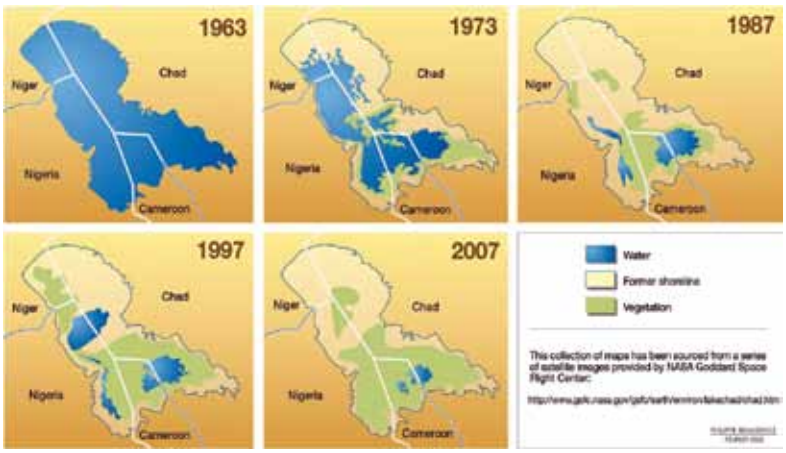
The 14th Summit of the LCBC Heads of State and Government held on 30th April 2012 in Chad adopted the Water Charter of the Lake Chad Basin, to improve equitable and sustainable use of water resources and reinforce cooperation on water issues among member countries.

By Engr. Sanusi Imran Abdullahi,
Executive Secretary,
Lake Chad Basin Commission
www.cblt.org

The Lake Chad Basin is situated in Central Africa. It comprises a vast expanse of land made up of several catchments that feed Lake Chad. The entire geographical basin covers an area of 2,434,000 km^2 but the active hydrological basin is 966,955 km^2.

The Lake Chad itself is a terminal depression of the Lake Chad drainage basin and is experiencing gradual and drastic shrinkage in surface area since the 1970's.

The Lake Chad Basin Commission (LCBC) is an Intergovernmental organization created on 22nd May, 1964 in Fort-Lamy now called N'Djamena, capital city of the Republic of Chad. The mandate of the Commission is to regulate and rationalize the sustainable use of the Lake Chad and its resources.



DELIVERING SUSTAINABLE CHANGE IN MEXICO

SCM is a Mexican company. For more than 20 years, we have been the number one distribution courier service. We also aim to be the country's most sustainable company

A high percentage of our staff come from poor backgrounds.

That forces them to live in vulnerable circumstances where academic training is rare, as is developing an opportunity to improve their quality of life.

This is why all our actions tend to focus on social responsibility. We aim to give our staff the necessary tools and the opportunity to improve not only in their personal but also their professional and family lives.

We strongly believe that if we manage to improve our staff's quality of life, then, they will be able to be agents of change, who can make a positive impact within their communities and Mexico.

Sustainable Rural Life

One of our main projects is "Sustainable Rural Life".

This project was made in alliance with the "Mexican Fund for the Nature's Conservation".

About 450 collaborators, in addition with their families and some communities where this foundation gives help, are benefitting with this program that uses technologies like conservation wood-burning stoves, solar cookers and heaters.

We have chosen to work in four different states: Veracruz, Puebla, Tlaxcala y Querétaro.

These states have the characteristics needed to implement the program. They are rural areas, they use firewood and they are in a state of risk for being on low socioeconomics conditions.

SCM is a 100% Mexican company founded on September 3, 1992.

It specialises in the mass distribution of corporate documents and packages.

Deliveries made possible by 3000 employees, of which 75% are part of the distribution process.

The Sustainable Rural Life project was developed in three stages:

1. Evaluation of the SCM collaborators life conditions.
2. Delivery of the eco-technologies; installation and training for their uses.
3. Supervision and measurement.

Simple, Life-Changing Tools
Solar Pot: This allows you to cook with sunlight only, thus decreasing the use of gas, wood and indiscriminate logging.

Wood-Saving Stove: This only requires small amounts of firewood to use. It has a hermetic camera that distributes the heat along the plate and expels the smoke through the chimney, allowing a smoke-free environment for the families.

Solar water heater: This system is equipped with solar cells that allow the water to keep warm for many hours, so that can be used by up to 10 people.

The analysis results of the combined use of these technologies called “eco-technologies”, gives important benefits:

- Reduction in the use of firewood and gas.
- Savings for family economy.
- Decrease of respiratory diseases and
- Awareness about the importance of making an appropriate use of natural resources.

In that way, each one of us, contribute in a personal way to reduce deforestation and the effect of greenhouse gas emissions.

Our company benefits by lowering its wider carbon footprint.

At SCM we are convinced that the alliance between ONG´s, private companies and government can generate and change attitudes towards the environment and the development of all nations.

Servicio Continental de Mensajeria (SCM)
www.scm.mx

SCM®
el poder de la entrega®

RED COLOMBIA VERDE: WHERE BIODIVERSITY MEETS BUSINESS

Colombian families committed to addressing the causes of climate change

Red Colombia Verde is a 41-strong business organisation with a deep community base.

It is a leader in the Biotrade and the Green Markets, and a contributor to organizations to reduce the effects of climate change, validating the work they have done daily for over two decades “to recover traditional and ancestral knowledge of agriculture production”.

The ‘Red’ leads the sustainable use and development of natural resources and biodiversity, issues related to non-timber products, timber, farming, agro-ecological, organic agriculture, biotechnology, manufactured products less polluting, clean technologies and impact mitigation equipment, environmental education, integrated solid waste management.

We integrate rural populations, peasants, Indians and Afro-Colombians from all regions of the country. Geographically we have a presence in 16 departments and 55 municipalities, we support 33,217 families and have a regional joint operation that operates through five regional nodes and 10 sub nodes. The commitment of the Red Colombia Verde is to make a sustainable use of biodiversity and natural resources.

Cooperation

We support partner organizations to make continuous innovation improvement of production and processing of products such as coffee, cocoa, honey, brown sugar, natural ingredients, Amazon exotic fruits, roots and tubers, fruits, vegetables, orellanas, aromatic and medicinal plants, rubber, handicrafts, bio-products and tourism services. We generate a fair trade for producers and consumers, ensuring people can consume certified products.

We have built organizational strategies to strengthen the development and management capacity of Red Colombia Verde and of its partners through the implementation of activities of information, communication and exchange of experience.

This is how we lead the implementation of technologies and processing, through peer training using virtual education and Technological Tours Business. This allows developed organizations to help those that are beginning their process to boost their competitiveness.

These strategies have led to community-based organizations with business vision, achieving high quality products allowing them to be competitive domestically and internationally.

In these five years of existence in Red Colombia Verde businesses have substantially developed. Fair trade is being conducted through our 'virtual' organic shop "Colombia Verde" [www.tiendacolombiaverde.com] and physically in different regions of the country, which accompany consumer sensitivity by promoting conventional and virtual campaigns. This encourages the purchase and use of our organic products, such as "Ecologízate" campaign, "feed on life," "eat healthy".

We also manage social commitment seeking to strengthen the organizations. Years of civil resistance, battles for ethnic rights, and the protection of traditional knowledge have not been rewarded. Now we can offer a different option, a way of life that allows people "to cultivate the earth to live with dignity."

Finally, Red Colombia Verde and associated organizations have contributed to mitigate the effects of global climate change. We have worked to strengthen good agriculture practices in the different regions of the country, through the application of cleaner production practices and avoiding the emission of significant amounts of thermo-active gasses. Our commitment will continue these strategies to reduce the global problem that causes a justified concern to the international community.

Red Colombia Verde
www.redcolombiaverde.org
www.tiendacolombiaverde.com

BILBAO'S EXPERIENCE IN URBAN SOLUTIONS

The experience that Bilbao has acquired in its impressive urban transformation means it can export solutions that may help to develop liveable, sustainable, dynamic cities with a good quality of life

We are all aware of the increasingly important role that cities play in the global economy and of the strategic importance of so-called urban solutions as a future economic sector. Never before in the history of humanity are cities growing and changing as much as they are at the start of the 21st century.

50% of the population of the world has moved to cities, and in the next few decades it is estimated that 80% of the world's population will live in urban areas. As a result, cities are becoming critical spaces for social cohesion, and to a large extent are responsible for sustainability and the fight against climate change.

Over time, Europe has been able to develop some of the most humane attractive cities in the world, and Bilbao is a clear example of a European city that has reinvented its economic model and has carried out an extraordinary urban transformation.

It has gone from being a post-industrial city to a vibrant metropolis: an internationally acknowledged reinvention with a long series of awards such as the first Lee Kuan Yew World Cities Prize in Singapore, possibly the most prestigious international prize to be awarded for urban excellence.

Competitive

The enormous effort made in the last 25 years has resulted in a highly positive experience for Bilbao and its region as far as economic growth is concerned. GDP per capita in the Basque Country, based on Purchasing Power Parity (PPP), amounts to around 130% of the European Union average, and its regional level of human development is comparable to that of the most advanced countries.

The Basque Country is one of the most competitive and productive economies in Europe, and has evolved from being a traditional industrial economy to a new economy with industry and advanced services, with a high level of R+D+I. A quarter of the wealth of the Basque economy comes directly from industrial activity, together with a significant supply of services for companies that produce 27% of Bilbao's GDP.

The economic capital of the Basque Country provides a top-quality environment for an advanced economy. It has first-rate competitive physical and technological infrastructures, a strategic location on the so-called "Atlantic axis" of the European Union and an efficient connectivity network, an excellent quality of life for living, working and visiting; legal security, a tax system of its own and fine rigorous and transparent public governance.

Innovation

The transformation of Bilbao, which is now an international benchmark, has been possible thanks to the impetus and leadership provided by public institutions, but to a large extent, it has been thanks to the effort, innovation and technical quality of professionals and companies that work in Bilbao and in the Basque Country. The urban revolution that it has experienced has been possible because we had an industrial fabric in the region that has provided the technology and capacity for this.

It has been carried out with Basque companies that specialise in clean energies, mobility, engineering, sewage treatment, rubbish, etc., that is, companies in the sectors of eco-technology and urban solutions and advanced services for industry, sectors that in this unstoppable world of cities are becoming strategic sectors for the economic future of the territory.

We are convinced that the international dimension that Bilbao has acquired with its urban transformation is going to help to ensure that the companies that have helped to reinvent the city will have greater opportunities in this global market and in this world of urban growth. Companies in high value-added sectors, that are a benchmark for knowledge, excellence, innovation and technology, with the capacity to export solutions to other cities and regions, may help to develop a world of liveable, sustainable, dynamic cities with a good quality of life.

By Iñaki Azkuna, Mayor of Bilbao

www.bilbaointernational.com
http://urbansolutionsbilbao.com/#
www.bilbao.net

BILBAO BIZKAIA be basque

URBAN

SOLUTIONS

BILBAO

MEASURING CLIMATE IMPACTS ON THE WORLD'S OCEANS

By Dr. John T. Wells, Dean and Director of the Virginia Institute of Marine Science, The College of William & Mary

The Virginia Institute of Marine Science (VIMS) is a leading source of knowledge as we face decisions regarding the impacts of climate change on the world's oceans, bays and estuaries

Marine environments are ecosystems of unsurpassed complexity and value, and our work informs colleagues and policy-makers at every level.

Within the coastal zone, we have advanced scientific understanding through research on:

- watershed processes as they interact with human activities such as agriculture and industry;
- water quality as measured by ocean observing systems that consist of automated buoys and vessel-mounted sensors;
- shoreline flooding and erosion predictions derived from computer modeling of sea-level rise and storm surge;
- climate-sensitive fisheries resources that require management at a multispecies level;
- biodiversity and the role of non-native species in the provision of ecosystem services; and,
- transport of contaminants and pathogens, and the regional impact of aquatic diseases.

Much of this research has historically been supported by local, state, and federal government. This is no longer a sustainable model. Stiff competition for limited resources—and on occasion sluggish response to innovative proposals—have diminished the attractiveness of traditional funding sources.

Given the magnitude of the problems associated with climate change, there has never been a greater need for engagement with, and support from, other funding sources such as industry and non-profits.

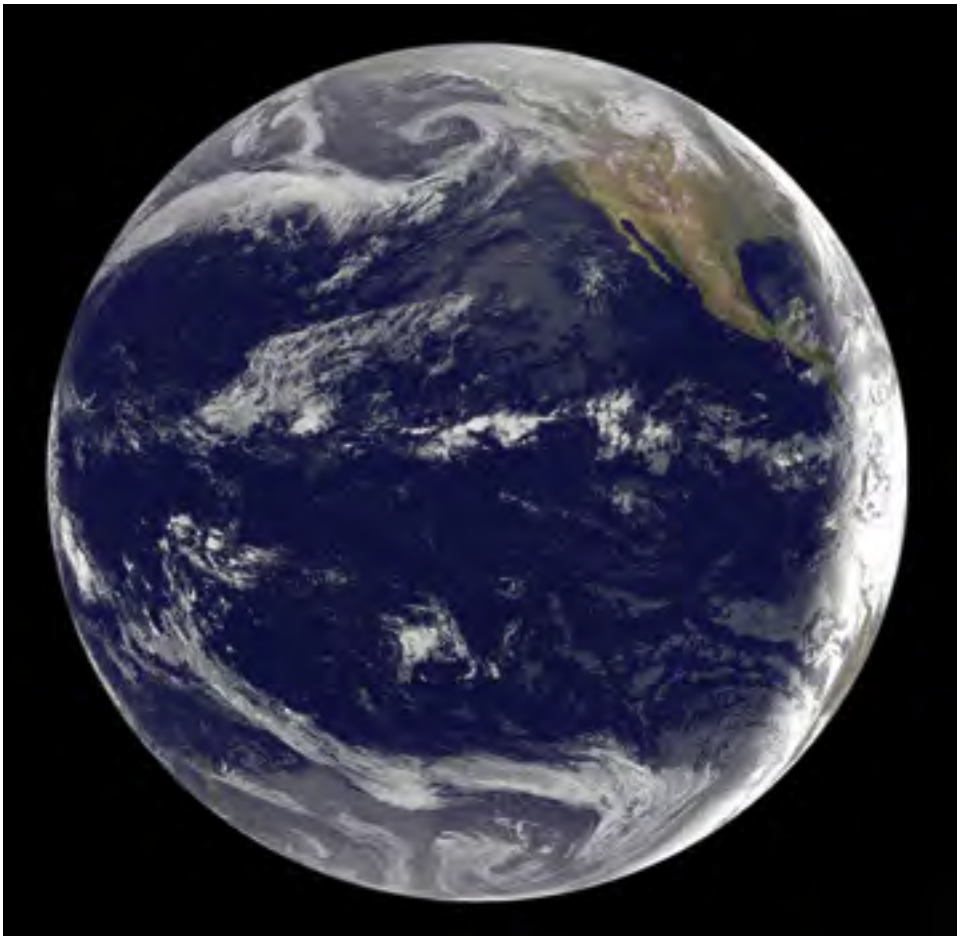
Case Study: Coastal Flooding and the Need for Immediate Action

Perhaps the most visible reminder of climate-change impacts occurs at the shoreline, where rising seas cause recurrent flooding on ever more frequent time scales, often resulting in significant economic losses.

Reviewing a comprehensive list of strategies used worldwide in areas vulnerable to flooding *(http://bit.ly/vims_cf_report)*, reveals that no single response in Virginia will fully address the complex web of social, legal, and environmental issues that contribute to flooding problems.

Staircase approach for adapting to coastal flooding in rural and urban areas.

The Virginia Institute of Marine Science has a three-part mission to conduct interdisciplinary research in coastal ocean and estuarine science, educate students and citizens, and provide advisory service to policy makers, industry, and the public and is currently among the largest marine research and education centers in the United States.



©: NASA Goddard Space Flight Centre.

It is also clear that we must begin making progress immediately because implementation of adaptive measures is likely to take decades.

Adaptation Options and Strategies

VIMS research has identified three adaptation options for Virginia that also have broad applicability worldwide: management, accommodation, and protection. Management encompasses zoning policies that prevent unwise development in high-risk areas (and could also include retreat from the coast), while accommodation is aimed at raising buildings and roads and enhancing storm-water systems.

Protection measures include engineered hard structures such as levees, seawalls, and flood gates as well as soft approaches such as marsh creation and living shorelines. Flexible plans that match adaptation options to the specific circumstances of each coastal locality are most desirable. In fact, global adaptation strategies that are multilayered and applied in steps can together result in lower risk than any single measure.

Budgetary, Legal and Technical Issues

Prioritization for various actions must be based in large part on risk, followed by cost-benefit studies of various strategies. Risks are predicted to become worse, and they are not necessarily the same from one area to another.

In addition to proximity to water, assessing risk requires accurate elevation maps that must be constructed from comprehensive and highly accurate elevation data using LIDAR, a high-resolution mapping technique that uses laser light to gauge ground elevation.

LIDAR is not yet available for all localities. Planning also requires that actions occur within the regulatory and legal framework of local government where the enabling authority may be largely unexplored or not well understood. The nexus of coastal resource management is integration of the latest science with legal and policy analysis (www.vims.edu/vcpc).

Future Research Needs

There is much to be learned from regional case studies. However, strategies also require serious planning, commitment of significant resources, and careful analysis of evolving conditions.

Research needs include: 1) more accurate sea-level predications to replace reliance on past conditions to predict the future; 2) better assessment of local variability in sea-level rise, due in part to subsidence of land; and, 3) generating suitably accurate maps of coastal elevation that have been updated using LIDAR.

Virginia Institute of Marine Science
www.vims.edu

VIMS | William & Mary
Virginia Institute of Marine Science

MEXICO'S CLIMATE KNOWLEDGE NETWORK

Instituto Politécnico Nacional explains how it contributes to the development of the national guiding principles on Climate Change Policy

Academic and research institutions work hard to generate original knowledge and provide high quality human education. However, there is another critical role for the academic world; to become a bridge builder between civil society and policy-making organizations.

The strength of the Instituto Politécnico Nacional (IPN) has been the way it has positioned itself as a leading institution working with government bodies in Mexico. In light of the growing number and negative impact of the climate change effects, the national strategy for the climate change was created.

IPN contributes high quality research focused to study climate changes effects, with ways to establish a competitive and sustainable economy and to reach a significant reduction of carbon emissions. The results of this research has been used as support to establish the action lines for the National Strategy of Climate Change.

Research developed at IPN provides relevant information for the key topics included in the National Strategy of Climate Change. These include elements of a national climate change policy, adapting to the impacts of climate change and low-carbon emissions development.

National climate policy
Threats to the permanence of environmental goods and services offered by the Soil Preservation program in different regions require research projects whose results provide technical arguments that help guide the development of local public policies.

An example of institutional effort in this direction is the analysis of climate trends obtained from Climate Indexes, through the historical information available from weather stations from which climate scenarios were generated in the medium term.

The results obtained from this project allow us to provide information related to the effects of increased evapotranspiration and thus the possibility of favorable conditions for forest fires (natural and induced) or restrictions to control pests and diseases such as bark beetle (Dendroctonus) that in less adverse weather conditions can increase their impact.

Adapting
Some research projects are oriented to the design, development and validation of methods for determining microbial entities and physicochemical and biochemical factors affecting the conservation and restoration of ecosystems.

Furthermore, these results establish the indicators for the selection, implementation and design of the rules governing the use of microorganisms for the conservation, restoration and enhancement of ecosystems by microbes.

Low-carbon development
Some projects are aimed at developing sustainable housing proposals as an alternative urban development with attention to environmental policies.

Thus, the research of the Instituto Politécnico Nacional yields results that directly impact the establishment of "prioritization criteria" of the National Climate Change Strategy.

Instituto Politécnico Nacional
www.ipn.mx

Founded in 1936, the Instituto Politécnico Nacional (National Polytechnic Institute, IPN) is the foremost public technological higher education centre in Mexico.

The institute produces technology development and research of the highest quality geared to solving the challenges facing humanity, of which climate change is the priority.

Its projects feed in to the National Strategic of Climatic Action of the Mexican government.

GREEN BUILDINGS

For so many years the green movement has approached the international climate negotiations with a mixture of both hope and fear. Sadly, in recent years it has been the latter emotion which has tended to win out

I think the lack of progress in putting in place a global, legally binding successor to Kyoto is largely attributable to an entrenched perception that carbon reductions have to come at the expense of economic growth. However, that couldn't really be further from the truth, and the built environment is by far and away the best example of a win-win-win outcome.

Globally, buildings are responsible for 30 per cent of greenhouse gas emissions, not to mention 25 per cent of fresh water use and almost half of all raw materials. But buildings represent the most cost effective way to mitigate carbon, whether through the construction of new, nearly zero energy buildings, or the retrofit of the existing stock.

National and local governments, community groups and the private sector are increasingly coming to recognise that green, low impact buildings offer not just carbon mitigation potential, but healthier, more productive places to live and work, and global economic growth opportunities. With inspirational projects coming thick and fast, the question should not be can we afford to do this - but can we afford not to?

Paul King, Chief Executive,
UK Green Building Council
www.ukgbc.org

A world living united and in peace

is the best heritage to our children

Just like an aged tree's roots, the family core values, in which our company has been managed since its establishment in 1899, strengthen the construction of the country and the world we all long for.

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ECOLOGICALLY SENSITIVE SECURITY

Ukrainian security company TSM Group explains how ecologically and environmentally policies are now at the heart of its work practices

Corporation TSM Group is the leader of the Ukrainian market in the area of fire protection, hi-tech engineering and security systems developing, designing and manufacturing. One of the Corporation's priorities is the production of physical security systems which are exported to 33 countries.

One of the key activities of the Corporation is developing and manufacturing security systems.

These include turnstiles, electronic access control, road blocking systems and anti-ramming devices. The advantages of these systems have surprising secondary benefits in improving key environmental issues.

For 20 years we have installed our products in public and industrial facilities across Europe, Asia and Africa. In particular, our turnstiles are installed at a nuclear power plants which are environmentally sensitive and need special ecological protection.

For more than 10 years our barriers have successfully controlled the movement of personnel and visitors as well as ecologically sensitive and unsafe nuclear materials at the Zaporizhia Nuclear Power Plant – the largest such plant in Europe.

Nuclear safety

Our company's developments in access control and physical protection are important elements of complex nuclear power plant safety. They meet the latest requirements of the IAEA and local ecological authorities.

The penetration of unauthorized persons and vehicles may have dramatic consequences and could lead to ecological disaster. Therefore, the physical protection of nuclear power plants is the first and the main obstacle against any attacker.

Electronic systems are another integral part of barriers we help provide. That's why our company has developed an integrated security system called STERN. At the first glance, access control is not related to the "green technology" and do not care for the environment.

But in fact, individual components and the entire system are making a significant contribution to the economy of natural resources and efforts to prevent climate change.

Resource use

STERN allows companies and power plant supervisors to control the movement of personnel and vehicles via gates, turnstiles and office doors. Data gathered through this system can generate valuable information and ensure energy is used in an effective way.

If a company knows when a room is occupied, it can control the lighting, heating and air conditioning. This can bring great results in resources efficiency on a global scale.

The integration of access control system with the whole building management offers many opportunities for people to use energy more wisely. This allows us to turn on or off lightning and equipment much easier and to understand when the energy is really needed.

What was done before with more efforts, with STERN now can be done by just a few clicks. Due to our special modes, it is possible to save up to 75%of energy consumption.

Paperless offices

All the components are made of environmentally-neutral materials.

Our access control system operates using almost any card readers. This avoids the extra cost and scrapping readers. It also allows us to combine various systems into one, reducing the number of different cards.

STERN makes possible to track electronically time and attendance at work. Through this, we can forget about paper time cards.

No paper is needed, saving trees. It is important that all of our systems are designed on the principle of interchangeability. This way we ensure there is no need to throw out and utilize the whole systems or a significant number of their parts.

At TSM we believe that physical security, high-end electronic access control systems, the functionality that they offer, and the effective implementation of these systems can help business hit a new level in the field of environmental protection.

TSM Group
www.tsm.kiev.ua

TRAINING FOR A NEW ECONOMY

Can individual behavior change mitigate climate change on a larger scale?

Train for it.
It's clear that the battle against climate change requires support through regulation, legislation, and large-scale investments. But, if large numbers of people make small changes that require little to no investment or time, the potential for a positive shift in climate impacts is staggering. Bringing sustainability education into the workplace, aligned with organizational goals and objectives, has huge potential for individual behavior to influence on a larger scale. Corporations that are able to provide employees with sustainability training relevant to the company's goals, business strategy, operations, and individual jobs, will be poised to succeed in a competitive environment - and make a difference environmentally.

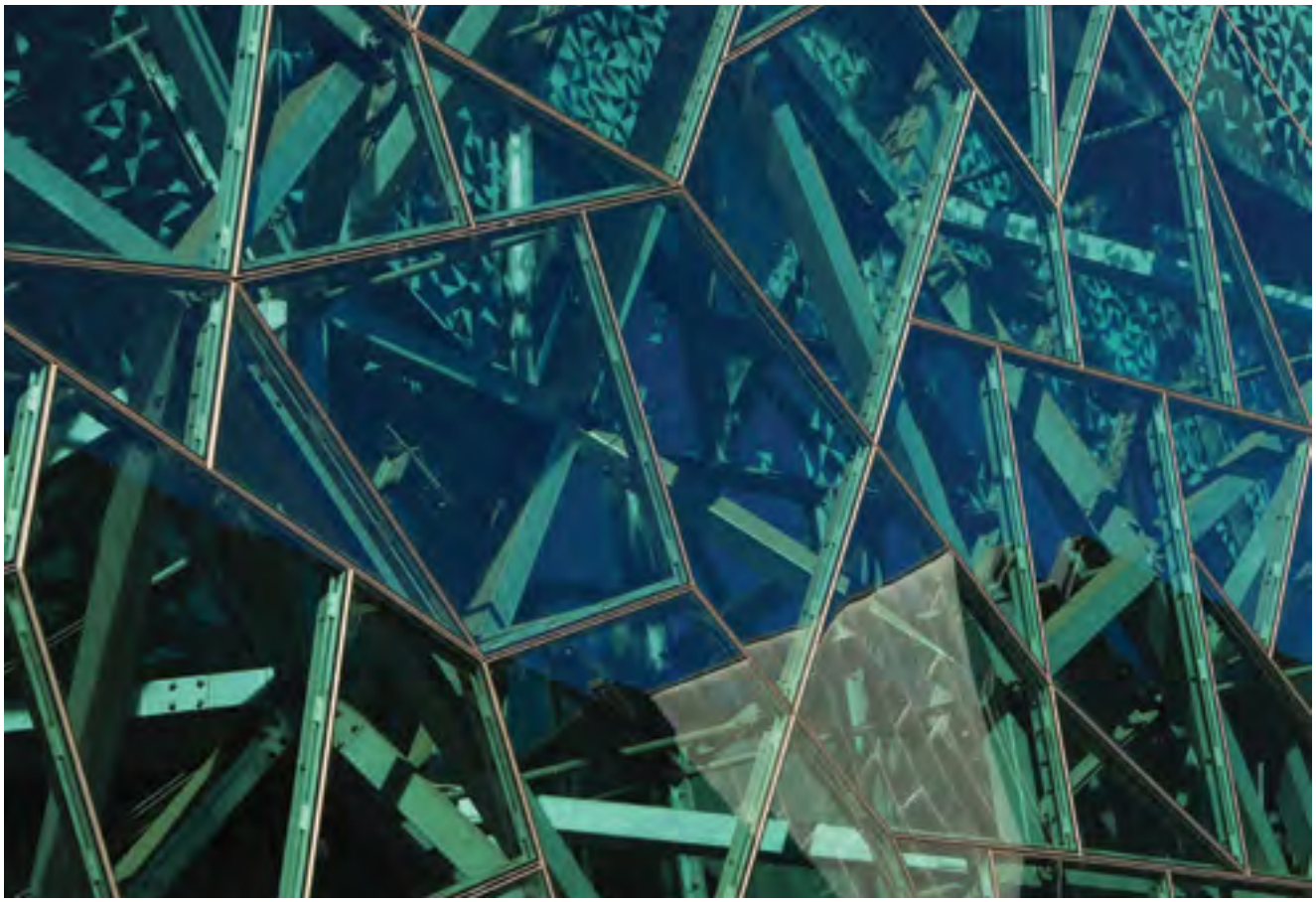
Establish Value by Linking to Core Business Objectives
Through sustainability education, corporations have a unique opportunity to integrate sustainability into the corporate message and culture. By investing in advanced knowledge for the workforce, the company shows support and a commitment to cleaner, more efficient ways of doing business. A properly designed sustainability training program encourages new ways of thinking and doing business. Employees are better able to see opportunities for change that can contribute to the overall strategy of the organization.

Empower Agents of Change
Education empowers employees to look at their work from a new perspective, leading to new insights, ideas, and other opportunities to contribute and engage others. Even from a general awareness perspective, employees are working and living in the buildings that represent 40 percent of the world's energy consumption. A LEED-certified building cannot achieve its intended peak performance without educated occupants to properly utilize technology and make informed choices about energy use, waste, and water conservation. Exact estimates vary, but experts at Jones Lang LaSalle have reported that in the properties they manage, an average of 50–60 percent of energy use is directly related to how commercial building tenants use their space.

Social Power
Countless behavioral science researchers have found that people are influenced by the actions of others. Whether it's a competitive nature or peer pressure, social norms are playing into the adoption of sustainable practices. A cohesive, supported message on

The power to create a more sustainable workforce is in our hands. Educating our employees on sustainable actions shows that we are investing in our workplace and our planet.

Education is the key to shifting behavior change in the workplace.



sustainability helps cement it into the organization as a socially accepted, valued, and desired mindset. New, more developed social media platforms make it even easier to keep employees connected to their peers and to the sustainability effort.

Beyond the Workplace

A 2013 study by Gibbs and Soell, a U.S. consulting firm, found that 73 percent of adults who participated in sustainability programs at work were more likely to make sustainable choices at home.

Making the Connection - Behavioral Science

Infusing corporate sustainability training programs with a bit of behavioral science is the key to making sustainability sustainable. Employees need to know what sustainability means to the organization and why it's important. How does it impact their lives, their jobs, and how can they contribute? What is important to employees, and how does that link to opportunities for improvements within the organization?

There is power in education and awareness that can transform how we live our lives and run our businesses, for the good of our planet, our health, and our economy. The workplace is the place to begin planting the seeds for an impactful shift in behavior.

Please visit Everblue at http://www.everblue.edu or call 1-800-460-2575

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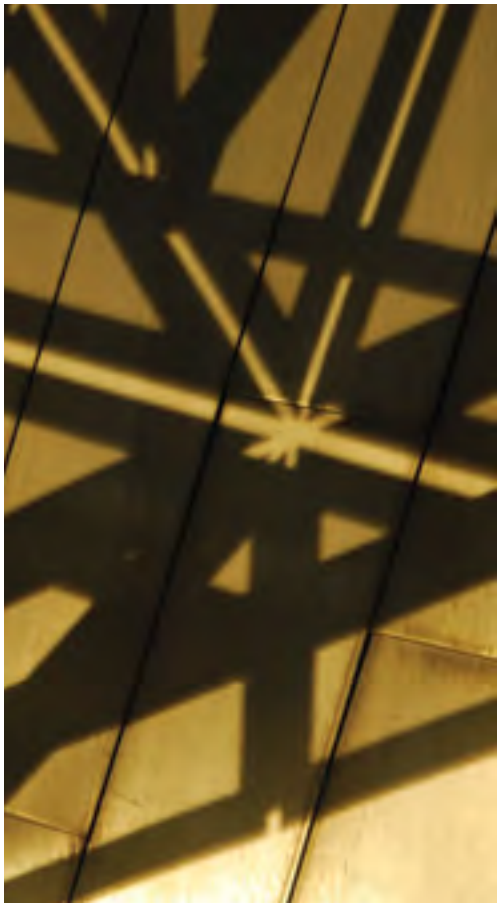


Both Photos: © Rob Deutscher. www.flickr.com/photos/bobarc

PREDICTABILITY KEY TO LOW-EMISSIONS ECONOMIC GROWTH

By Jean-Guy Carrier, Secretary General of the International Chamber of Commerce

Greener economies offer opportunities for all of us. Not only are they good for the climate and for the environment, they also drive economic growth and job creation. Yet as national governments the world over struggle to resolve challenges alone, greater cooperation is needed to meet the pressing environmental and economic challenges of today.

This is why global business is working to develop climate change solutions across a number of areas, including reducing greenhouse gas emissions, adapting to climate impacts, and promoting energy solutions, including efficiency.

As the world business organization representing a network of 6.5 million companies, ICC is committed to developing cooperative solutions within the United Nations Framework Convention on Climate Change (UNFCCC) process that will unleash investment and deployment of innovative technologies, products and services for low emissions economic growth and job creation.

In the lead up to the Warsaw Climate Change Conference, global business is well aware that governments will need to overcome a number of significant roadblocks in order to reach a balanced and globally-effective outcome in the framework of the UNFCCC by 2015.

This year's Conference is a critical opportunity to deliver a roadmap for the 2015 climate negotiations and pave the way for promoting climate-resilient, low-emission societies.

Currently, the lack of clarity on the future outcome and uncertainty over how it would work in practice curb the pace of business investment and innovation, and decisions to pursue a lower emissions economic structure.

ICC urges parties to level the global playing field by addressing both environmental targets and competitiveness, fostering efficiency measures and pursuing market-based approaches – within the context of each country's respective national circumstances – and enabling the UNFCCC to provide a platform to link various carbon pricing schemes and avoid carbon leakage.

For a future agreement to be inclusive and effective, it will need to find common ground on a broad range of approaches, initiatives and mechanisms under discussion both inside and outside the Convention, particularly in important global forums such as the G20 and The Major Economies Forum on energy and climate.

While the issues at stake are of high complexity, they are not insurmountable. Ambitious steps can be achieved in Warsaw, Lima (2014) and Paris (2015) if the political will is present to take difficult decisions. Continuing our role as a primary business interlocutor and partner in key intergovernmental negotiations, ICC will contribute to constructive engagement and dialogue in Warsaw and beyond to help lead to a higher level of global policy coordination to address climate change impacts and lower emissions of greenhouse gases.

Jean-Guy Carrier is Secretary General of the International Chamber of Commerce.
www.iccwbo.org

SMALL-SCALE WIND'S BIG SOLUTION

By Ralph Mannion,
Managing Director, Kingspan Environmental

A look at the impact of small wind turbines on remote and rural communities

Over 20 years ago a pioneering rural development scheme was announced for an island community deep in the South Atlantic.

For many of us The Falkland Islands might appear unimaginably remote, isolated from the modern world with some of the most challenging weather conditions known to man. Over 85% of its 2,500 inhabitants live rurally and independently from mains electricity, and the decision they came to 20 years ago was that without sustainability and innovation at the heart of their community, rural life would become a thing of the past.

In fact, 22% of the world's population live in similar landscapes, with no national grid to call upon for heat and power. Most are reliant on diesel generators which are not only incredibly expensive, but damaging to the environment and perhaps more relevant, completely unsustainable!

So what was this pioneering initiative provided to The Falkland Islands residents two decades ago? And what can it provide to rural life, remote locations and communities the world over?

Kingspan Wind is Kingspan Environmental's small wind turbine brand. To date, more than 4,500 Kingspan small wind turbines have been installed in 70 countries, on every global continent.

For more information on small turbines: www.kingspanenviro.co.uk/small-wind, call +44 (0)1560 486 570, or email wind@kingspanenviro.co.uk

A clean, green, sustainable power, all supplied by a network of 130 small wind turbines.

While many people will be familiar with the large turbines that punctuate so many landscapes across the globe, the impact of small wind turbines and their ability to adapt to a wide range of environments may not be fully appreciated.

Our team have been designing, installing and commissioning 3kW, 6kW and 15kW systems, which are used in a variety of applications, for more than a quarter of a century.

To date, our global fleet has accumulated over 35 million operational run hours, off-setting over 38,000 tonnes of carbon annually from our global fleet of 4,500 small turbines.

The benefits of small turbine technology are considerable and with both international and localised support, they have the potential to become an integral part of everyday life around the world.

Small wind is easily accessible, less obtrusive to the surrounding landscape than large wind turbines and perhaps more importantly can provide power both day and night.

Our experience of installing small wind turbines in more than 70 countries and on every continent has demonstrated the technology's adaptability - allowing island residents, schools, hospitals, animal welfare centres, local authorities as well as domestic customers to benefit from producing their own affordable, green energy whilst significantly reducing their reliance on fossil fuels. Even in high wind and storm conditions, so often cited as being an Achilles Heel of wind turbines, small turbines are capable of continuing to turn and generate energy provided they have robust engineering, with guarantees and safeguards built in.

What's also apparent from all these installations is that small wind does not need to be used solely for off-grid battery charge systems. We have designed direct heating systems which can provide hot water, mini-grid systems that are powering entire communities and islands as well as standard grid connect turbines if a localised grid already exists.

The rural development programme which has proven so successful across a whole generation in The Falklands is just the tip of the iceberg. Through grant aid, government support, funding and investment, thousands more of these schemes could become a reality.

In our opinion, small wind has come of age; it is no longer a new or untested technology but an obvious choice in addressing localised sustainability.

Kingspan Environmental
www.kingspanenviro.co.uk/small-wind

CAN COP 19 MOVE THE GREEN CLIMATE FUND CLOSER TO REALITY?

By Andrea Rodriguez and Marcus Pearson, Aida Americas

The Green Climate Fund was created as an effective response to the impacts of climate change by channeling financial resources from developed to developing countries. Will this happen? The Conference of the Parties in November will provide an opportunity for developing countries to lobby for significant financial commitments from the developed world to ensure the long-term viability of the GCF

The Green Climate Fund (GCF) was created in 2010 at the 16th Conference of the Parties (COP 16) to the United Nations Framework Convention on Climate Change (UNFCCC). Its mission is to channel public and private financial resources to developing countries to help them mitigate and adapt to the impacts of climate change through low-emission and climate-resilient programs.

But nearly four years later, the GCF has yet to disburse any funds.

The GCF board has held four meetings with only limited results. At the first meeting in Geneva in August 2012, the board selected two interim co-chairs: Mr. Zaheer Fakir of South Africa and Mr. Ewen McDonald of Australia. It also formed committees, designated the World Bank as Interim Trustee, and agreed to invite observer organizations to participate, albeit in a restricted capacity.

A lack of consensus stalled decisions at the October 2012 meeting in South Korea, where the only notable motion was making Songdo, South Korea the GCF's headquarters.

More advances came at the February 2013 meeting in Berlin. The board adopted procedural rules to govern its actions, regulate board member selection and define the participation and role of civil society observers. This laid the groundwork for the GCF to carry out its mission.

At the June 2013 meeting in South Korea, the board then discussed the GCF's business model framework (BMF) and the policies, guidelines and organizational structures needed to commence operations. The board also chose the governance structure of the private sector facility (PSF)[1] and appointed Ms. Hela Cheikhrouhou of Tunisia as executive director of the GCF Secretariat.

The fifth meeting in Paris could address the many outstanding issues still needed to bring the GCF into effective operation. To do so, the Board must overcome its perceived ineffectiveness.

Civil Society Concerns

Civil society organizations (CSOs) are concerned about the GCF's decision-making process and future. Perhaps the greatest issue is the uncertainty of funding. The GCF board has started to identify project areas and define criteria to allocate resources, but developed countries have yet to pledge meaningful funds. Concrete commitments are essential to ensuring the availability of predictable resources needed to achieve long-term results to mitigate and protect against the impacts of climate change.

CSOs also fear that a lack of transparency and accountability will hamstring the GCF. Transparency does not seem to be a priority for the board. For example, the board has decided against webcasting its meetings even though the UNFCCC commonly does so, helping to cut costs and carbon emissions associated with travel. If the GCF already broadcasts meetings to observers in an overflow room, why not webcast? CSOs fear the board does not want to make its meetings open to the public.

Lack of public accountability remains a concern particularly because of the small opportunity given to civil society to participate in the decision- making process. The GCF will mobilize financial resources from both public and private sectors, and civil society oversight is needed to ensure that policies do not respond to the investment interests of the private sector but to the needs of the most vulnerable.

Moreover, the board is not granting CSOs meaningful opportunities for participation. The GCF publishes documents before meetings without sufficient time for many CSOs to review and comment on proposals[2]. Meanwhile, only two CSO representatives may actively participate at board meetings in person and even so may not be allowed to talk or approach board members.[3]

These practices call into question the GCF's legitimacy. Globally, CSOs play a vital role in developing climate change policy by informing decision makers about local issues and needs, and by providing examples of best practices for resource allocation. Given that the GCF stresses accountability in its mandate, CSOs should have access to government representatives and information in open and transparent meetings.

COP 19: An opportunity for the GCF?

The COP 19 this November in Warsaw will show the world whether the GCF can become an effective engine for climate change funding in developing countries.

At this conference, developing countries must seek firm financial commitments for climate adaptation and mitigation. Only guaranteed funding will enable the board to make effective decisions regarding resource distribution or provide developing nations with a clear picture of how much funding is available.

The GCF Board must also seek -- and receive -- guidance because many COP attendees will benefit from GCF resources. Countries can use the COP to provide advice on GCF policies, share their priority needs for funding, and recommend criteria to guarantee access to resources. The COP will also give CSO representatives a chance to raise questions and highlight counterproductive practices.

Conclusions

The COP presents a prime opportunity for developed nations to commit to the GCF's stated goals and pledge desperately needed financing. Parties and CSOs must use the COP – GCF's monitoring body – as a tool to improve GCF accountability, inclusivity and transparency so that the GCF can truly work to benefit vulnerable populations in developing countries. The COP should be a benchmark for advancing the GCF rather than just another event for developed countries to congratulate themselves on timorous steps forward.

Andrea Rodriguez and Marcus Pearson are climate change legal advisors with NGO Aida Americas

www.aida-americas.org

1 The PSF will enable the GCF to directly and indirectly finance private sector mitigation and adaptation activities at the national, regional and international level.

2 For the June meeting in South Korea, documents were published less than two weeks before the meeting, rather than 21 days as outlined in the additional rules of procedure decision taken in Berlin.

3 As was the case on the last day of the meeting in Songdo.

TRACKING THE WORLD'S CARBON BUBBLE

By Luke Sussams

The energy transition will require a shift in finance, involving both public and private actors. Where capital is flowing provides an indicator of whether the markets are taking climate change policy and impacts seriously.

Born out of the desire for information, Carbon Tracker sought to find out how many degrees of warming were embedded in the fossil fuel reserves of companies listed on the world's stock exchanges. The answer was stark. By making comparisons to carbon budgets – the total amount of CO_2 emissions permitted to 2050 to remain within a given temperature range – Carbon Tracker's research revealed 60-80% of listed fossil fuel reserves need to remain in the ground to keep global warming to the internationally agreed level of 2°C.

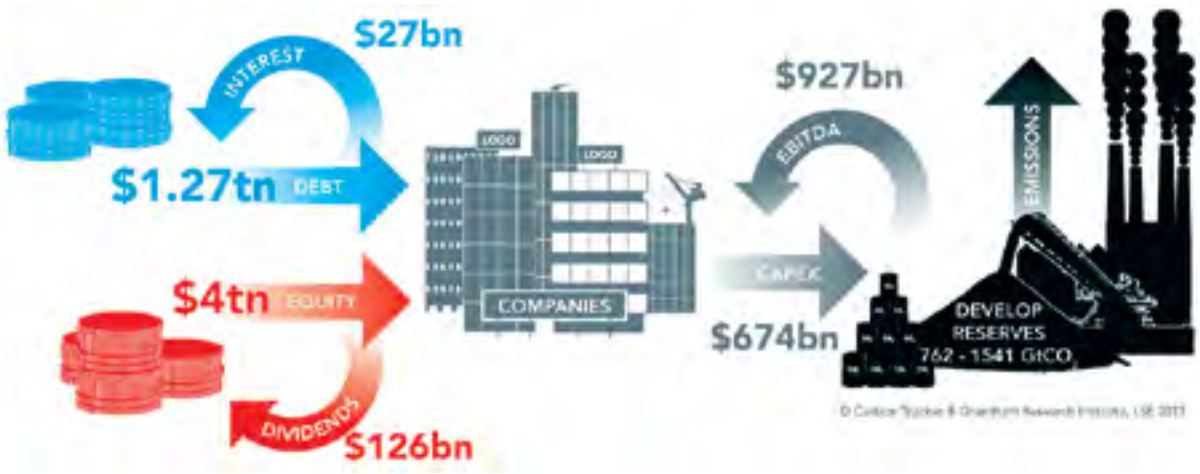
This massive overshoot in terms of carbon reserves has been described as a major contradiction sitting on the financial markets by Lord Stern. The findings have since been confirmed by the IEA's World Energy Outlook 2012 which concluded two thirds of fossil fuel reserves are 'unburnable'. Unfortunately carbon capture and storage (CCS) cannot extend the carbon budget significantly before 2050, even if the IEA's idealised scenario were to be funded and developed. Worryingly, there is little room for error, with very limited headroom before 3°C of warming results.

Wasted capital

It has been recognised that significant capital will be required to develop the low carbon infrastructure and technology essential for achieving emissions targets. Yet despite the surplus of fossil fuels relative to GHG targets, Carbon Tracker estimates $674bilion was ploughed into finding and developing more reserves last year. This indicates that over the next decade we have an opportunity to divert around $7trillion in capital from being wasted in reserves that will become stranded assets in a 2°C world. This cash could be returned to shareholders as dividends or invested in low carbon opportunities which will create more value.

There are several ways in which this capital can be diverted.

1. Investors can reallocate capital away from carbon intensive activities, to reduce their exposure to climate risk.
2. Companies can cancel new exploration and development projects.
3. Governments can provide policy certainty to support the development of low carbon energy, and remove subsidies which continue to promote established hydrocarbons.



The need for 2°C capital markets

These positive signals remain just the tip of the iceberg. They are going against the tide of the short-term drivers of the markets. The financial crisis demonstrated that the capital markets are not good at dealing with systemic risks. Climate change is a key test of whether the measures put in place to stabilise markets are enough. The signs to date are that market participants continue to make short-term decisions, in the belief that they will get out just in time before any crash, but we know that not everyone can get out the door at once.

The financial crisis was based on a market failure to understand and price risk in mortgage lending, using flawed assumptions that housing prices and demand would continue to rise indefinitely. If the market continues to believe that demand for coal and oil will grow forever it is clearly on course for 5-6°C of warming. The financial sector realigning with a two degree world will be a sign that governments are send strong enough signals to the market.

An orderly transition

Creating and communicating a clear pathway for the energy sector to decarbonise will be essential if capital is to be diverted from the incumbent energy sources. This is an opportunity to facilitate a smooth transition without sharp readjustments to the financial markets. There may be a few casualties who fail to adapt to a low carbon future, but this is normal as the market constituents are always changing.

It is clear that success will require fundamental challenges to the business models of fossil fuel companies and the way they are valued and rated. Setting a 2°C framework for investment will ensure that risks and rewards are adjusted for climate change from the beginning, rather than it being an inconvenient add-on that comes too late to influence investment decisions.

Carbon Tracker is working with investors, accountants, actuaries, analysts, ratings agencies, regulators and NGOs to align the financial system with climate change targets.

Luke Sussams is Senior Researcher at the Carbon Tracker Initiative.
Follow the team on Twitter @carbonbubble
www.carbontracker.org

CUTTING EMISSIONS AT SOURCE IN ECUADOR

State oil firm PETROAMAZONAS EP outlines how its energy efficiency strategy can reduce overall CO2 emissions by 800,000 tons per year

Attending conferences and exposing innovative ideas about Energy Efficiency in the upstream Oil Industry is all the rage these days.

But it is important to point out that these initiatives are often limited to polishing up the "perception" of the industry and not necessarily a starting point towards dramatically changing the "substance" or the way the industry does business.

No third party or norm exists for ranking/validating energy efficiency efforts/achievements in this industry which means that "whatever you say goes".

If you add the following arguments to the ones listed earlier it becomes clear that it is often very difficult to get funds and traction to implement Energy Efficiency in the Oil Industry:

- Oil companies do NOT perceive Energy Efficiency as detrimental to their survival. It is NOT a "cut throat" environment like the airline industry.
- Oil Company value and/or executive bonuses are mainly a factor of oil reserves, oil production volumes and prices; energy efficiency indicators are NOT a driving force, nor are there any price differentiations linked to these indicators.
- Allocating (limited) funds to energy efficiency projects is an uphill challenge given the high return (relative short term) prospects of oil reserve/oil production projects (core business of the oil companies).
- For Energy Efficiency projects to be successful, objectives, conviction and passion have to trickle down from top management to operators in the field (seldom are incentives tied to Energy Efficiency KPIs).

Given this business environment it is remarkable that an oil producing country like Ecuador decided to dramatically revolutionize the course previously dictated by highly rated international oil companies giving the green light to develop what has been referred to as the OGE&EE Project ("Optimización de Generación Eléctrica & Eficiencia Energética").

This consists of the following pillars:

- Reduce overall CO2 emissions by 800,000 tons per year.
- Optimize Associated Gas as raw material for LPG production and/or as fuel for power generation.
- Where possible use exhaust gas of the power generation facilities as energy source for process heat.
- Develop an integrated power distribution/transmission system by means of which the various oil fields (indifferent to the operators) can be interconnected thereby allowing for a dispatch based on economical merits (prioritizing lowest cost/emission power).
- By means of the power distribution/transmission system the various oil fields can share installed capacity, "stand-by" capacity and spinning reserve. By interconnecting this distribution/transmission system to the national grid the system can import or export power, thereby eliminating the risk of stranded assets in the future (post petroleum era).
- By means of power generated with Associated Gas and Hydropower imported from the national grid eliminate the use of diesel, and reduce the use of crude oil as fuel for power generation by means of which the net equivalent crude oil production is expected to increase by approximately 25,000 barrels per day.
- The OGE&EE Project has been designed (engineering) and is being developed (procurement, construction and commissioning) by a 100% Ecuadorian multiple task force whereby, at its peak, there will be over 3,000 people working directly on the Project. This is quite an achievement considering that in the past these large infrastructure projects were normally being developed by international engineering/construction companies.

- By means of the power distribution/transmission system low cost power will not only be distributed to the various oil fields but will also be shared with the local stake holders/communities in the area covering approximately 25,000 km^2.

The project scope consists of the following main activities:

- Develop over 300 MW of power generation capacity distributed in various fields.
- Build over 600 km of power distribution/transmission lines thereby providing the means to deliver power to the oil industry as well as the other local stakeholder/ populations in the area.
- Build gas gathering facilities and over 100 km of gas pipelines to transport the Associated Gas to the various power generation facilities.
- Through R&D develop i) flexible/multiple fuel power generation facilities (Associated Gas/Crude Oil/Condensates), ii) virtual gas pipelines (for small scale "stranded Associated Gas", iii) Waste Heat Recovery system thereby optimizing the heat from the exhausts of the power generation facilities.

On the 22nd of August 2013 the Board of Directors of PETROAMAZONAS EP approved the 2013 – 2017 Business Plan assigning a 1.2 billion budget for the OGE&EE Project.

To this date over 300 MM US $ has already been invested under the previously approved Business Plan.

The question remains whether the burden of projects with such far reaching environmental and social (positive) impact should be borne solely by the Ecuadorian people or whether internationally there is a joint responsibility and commitment towards sustainable energy?

When PETROAMAZONAS EP (through the OGE&EE unit) started developing the Project in 2009 it was confident that the international community would pick up its share of the burden through the Clean Development Mechanism (CDM) administrated through the UNFCCC.

After a long process, and after having already committed hundreds of millions of US $ to the Project, it came as a complete surprise to PETROAMAZONAS EP that by the end of 2012 (after various intents) the UNFCCC rejected the Project thereby depositing 100% of the burden with the Ecuadorian people although the benefits of the Project spread out well beyond its borders;

- Once the OGE&EE Project has been implemented overall CO2 emissions will be reduced by as much as 800,000 tons per year.
- Through the Project millions of US$ of equipment and material has been purchased in the developed/ industrialized world providing a stimulus to their economies.
- The OGE&EE Project has provided opportunities to multiple multinational Original Equipment Manufacturers (OEMs) to further develop their products.

The Project is a tremendous undertaking for a country that is going the extra mile by not only advocating "Responsibility and Commitment Towards Sustainable Energy" but also making real monetary commitments and sacrifices towards tangibly reducing the Carbon Footprint per produced barrel of crude oil and socializing the direct benefits of the oil industry to the local stake holders by providing them with electricity.

Moving forward a question remains; why did the "joint responsibility and commitment mechanism" through the CDM leave the OGE&EE initiative in the cold, virtually leaving it 100% up to Ecuador to deliver "Sustainable Energy" when it was understood by all parties that this should be a joint effort?

PETROAMAZONAS EP
www.petroamazonas.ec/en

PLUG AND PLAY SOLAR POWER

The energy sector is one of the single largest sources of climate-changing greenhouse (CO_2) gas emissions and action must be taken in order to break dependence on fossil fuels

Despite a weak global economic outlook, oil prices are soaring and CO_2 emissions have reached record highs.

Meanwhile, urbanization is increasing in several developing countries. Global electricity demand has grown by 40%. Experts predict it could triple by 2020.

Yet around 1.3 billion people, equal to one-fifth of the world's population, still do not have access to electricity.

Asia and sub-Saharan African account for 95% of those without access to modern energy while across developing countries average electrification rates are between 65-96%.

In some of those countries the grid is impractical or impossible to install. It drives populations to use polluting fuels like charcoal or traditional generators on a daily basis.

The health risks linked to using generators range from headaches and nausea, to respiratory disease and lung cancer.

At LIBRE ENERGIE we believe we have an answer that can help many communities around the world.

Our stand-alone solar generator system is safe, silent and reliable. It provides constant power throughout the day and night and can be used alongside other sources of energy.

Plug and play

Our kW3 is also made for various applications such as agriculture, industry, the military, telecommunications and communities in need of power.

LIBRE ENERGIE has created kW3 tailored to respond to primary needs such as water pumping and outage cuts. It offers a power supply of 220/380 Vac, commonly used in Africa and South America.

We have developed this technology taking into account poor road accessibility, a lack of technical skills on site and tough weather conditions (dust, high temperature, humidity).

We can cover up to 100% of our partner's needs.

Our engineering office, with experts qualified to the French National Standard of OPQPBI, work with hi-tech software to ensure a perfect architectural integration and optimal performance.

Our networks in Africa, the Middle East and South America allow us to access a variety of markets. We believe sustainability is a part of our responsibility so we train people locally to develop jobs.

We bring a difference to users by offering a power range from 3kW till 200kW and a strong, silent, free maintenance product.

Traditionally farmers in Morocco have relied on gas to power their irrigation systems, but LIBRE ENERGIE works with them to ensure they can develop safe and affordable sources of energy, enabling them to properly irrigate their crops.

LIBRE ENERGIE is a French company, and with 450 installations has gained an enviable reputation in the photovoltaic sector. It specializes in remote off-grid systems that deliver power to some of the most isolated locations. The associate directors conceived the cube kW3 because of their commitment develop greener and more efficient energy systems in developing parts of the world.

www.kwcube.com –
www.libre-energie.com –
www.facebook.com/libre.energie

We have recently worked in Guyana for a community of 35 houses and a church who had no grid available.

They were using fuel generators but the maintenance costs have grown and this solution had become too expensive. Spare parts, volatile and erratic fuel markets and fuel thieves make using generators hard work.

They were looking for individual solar solutions, and soon they realized that the investment would be bigger but cost effective.

A lot of countries are hit by poor electricity connections which has a strong impact on medical clinics, schools, telecoms, mines and industries. We are here to provide them with solutions.

Farmers are also trying to find an alternative to their precarious gas installations. There is strong awareness from them towards the environment and the need to use greener tools.

LIBRE ENERGIE
www.kwcube.com | www.libre-energie.com

The nature of our business is to

Petrom began its history in 1953 and today is an important Brazilian petrochemical company, with the abilities to meet the most diverse and challenging needs of its customers through solutions that meet rigorous quality, safety and environmental standards. Petrom is the largest manufacturer of phthalic anhydride in Latin America and maintains a wide portfolio of products whilst also striving to innovate in the areas of alcohol, fine

To learn more about Petrom, visit: www.petrom.com.br

Rodovia Dom Paulo Rolim Loureiro, Km 9 – Vila Moraes - 08766-500 - Mogi das Cruzes - SP - Brasil
Phone: (55 11) 4798-7500/7600 • Fax: (55 11) 4798-7501/7610
petrom@petrom.com.br

provide the best solutions for yours.

and green chemistry. A recent example of this is the launch of PLS Green, a new range of plasticizers developed from renewable sources such as sugar cane derivatives that meets the growing global demand for environmentally sustainable products. Petrom. A company whose main business is to contribute to the success of its clients wherever they are in the world.

PETROM

PETROQUÍMICA MOGI DAS CRUZES

DRIVING LATIN AMERICA'S SOARING WIND SECTOR

Sharing the benefits of renewable energy projects triggers sustainable development in indigenous communities.

Carried by the wind – SOWITEC's sustainable development through stakeholder engagement

Founded in 1993, SOWITEC has developed and today operates more than 30 wind farms in Germany. From its headquarter office in Sonnenbuehl, Germany, SOWITEC has expanded to several developing and emerging markets in Latin America.

Besides their huge contribution to the mitigation of greenhouse gases, large-scale renewable energy projects have an enormous potential to spur local development in rural communities. The key to release this development potential lies in an interactive and creative stakeholder engagement. The activities of SOWITEC are a showcase for how to reach this dual aim of green energy supply and sustainable development in Latin America.

When visitors arrive at Ismael Cortinas, a small village of 1000 inhabitants in the rural south-west of Uruguay, they are welcomed by the communities´ new coat of arms: It shows a sunset over the wide grasslands dominating the countryside around Ismael Cortinas – and the painting of a wind farm.

This coat of arms came off as winner in a competition asking local pupils to put down on paper their vision of Ismael Cortinas. It is a child´s vision of a green, sustainable future, and the fruit of an active stakeholder inclusion in the development of renewable energy projects: The wind farm in the coat of arms is SOWITEC´s project Pastorale, whose construction is yet to be started, but that is already part of the local identity in Ismael Cortinas.

Development through primary education: Building awareness for the environment from the beginning.

Local communities

Listen to the needs and visions of the local communities. This is the key to successfully realize a project idea and to maximize the impact of such a project on the sustainable development in its surroundings.

"Every community is unique, and has unique challenges to spur its development. You cannot come with standardized solutions. You have to sit down with the stakeholders and find out what really moves them," explains Frank Hummel, founder of SOWITEC.

In Uruguay, education drives social ambition. To assist in this development goal, the municipality and SOWITEC closed an agreement to facilitate educational visits of local primary school classes at the project site of Pastorale.

In the shadow of the wind turbines, the pupils will learn about climate change and see how renewable energy can be a central pillar for future generations.

In Chile, the local project development team found different circumstances, and aimed to actively engage the indigenous. "We already signed agreements with two Mapuche communities. We want them to actively participate in the projects and its benefits – to let them witness that sustainable energy supply not only protects the environment, but is also an interesting source of income that indigenous communities can reinvest according to their needs," said Frank Hummel.

Commitment and action

One important source of income of wind energy projects in Latin America could soon dry out. The revenues from the Clean Development Mechanism (CDM) under the Kyoto Protocol are an essential boost to renewable energy in the face of fierce competition from subsidized, climate-wrecking fossil fuels.

The current crisis and the unclear future of the carbon markets is, however, grist to the mill of fossil fuels. Immediate, real commitment and action in the climate change negotiations are indispensable.

The horrendous subsidies of fossil fuels and nuclear power need to be eliminated – in order to grant valuable and competitive renewable energy projects the leading role in the world´s energy supply they deserve, and allow them to unfold their manifold development incentives for a sustainable and clean future of our planet.

Sowitec
www.sowitec.com

SOWITEC

We are one of the world's leading companies for developing, financing, building and operating renewable energy projects across Latin America, Germany, Russia, Kazakhstan and Saudi Arabia.

Our processes and businesses are conducted by economic strength, social and environmental responsibility and respect to all our stakeholder groups.

We aim to promote the development of wind energy in new markets and work towards a sustainable future.

We want to give people the chance to secure and improve their electricity supply through renewable green energy sources.

SOWITEC
the power of future

BIOMASS BALER BOOSTS CLEAN ENERGY HARVESTS

Anderson's biobaler system creates biomass blocks containing over 1 MW/hr of energy

The BioBaler Harvesting System is a simple concept. In a single pass, with only one operator, the BioBaler cuts and compacts biomass into dense round bale. Bales can be collected on site at any time after harvest.

The philosophy behind the BioBaler harvesting system is to use a small dimension harvester to collect and densify the biomass in the field reducing the ecological footprint.

That shape and density of bales allow a better cost efficient transportation from the field to the power plant with conventional equipment. At this point, the biomass can be processed according to the specifications of the facilities with more efficient equipment.

Bales can be delivered directly to the plant or be stored in the field for future use. Bales of biomass will not deteriorate during storage over a long period, even though they are harvested in very wet conditions.

An advantage of this technology is that biomass bales dry out naturally without risk of spontaneous combustion, thereby increasing its heat potential; unlike a pile of woodchips that are rotting.

Each bale contains over 1 MW/hr of energy depending of the type of biomass.

The BioBaler can produce up to 40 bales/hr (20 tons/hr) in plantations and 15-18 bales/hr (8-10 tons/hr) in natural environments. It can collect different species of shrubs, bushes and trees up to 15 cm (6 in) in diameter.

Up to now, the BioBaler Harvesting System is the only commercially viable technology able to collect natural brushes.

BIOBALER output: a compact round bale

- The BioBaler produces a round, compact bale that is easy to handle and transport.
- Each bale weighs around 500-600 kg (1000 - 1200 lbs).

MOVING, storing and drying process

- Round bales of willow and poplar will dry naturally from 50-55 % to 18-20 % moisture content.
- Within 8 weeks of warm weather, willow and poplar moisture content will decrease naturally. Result may vary depending of general condition of your country.

LOGISTIC of bales after harvesting

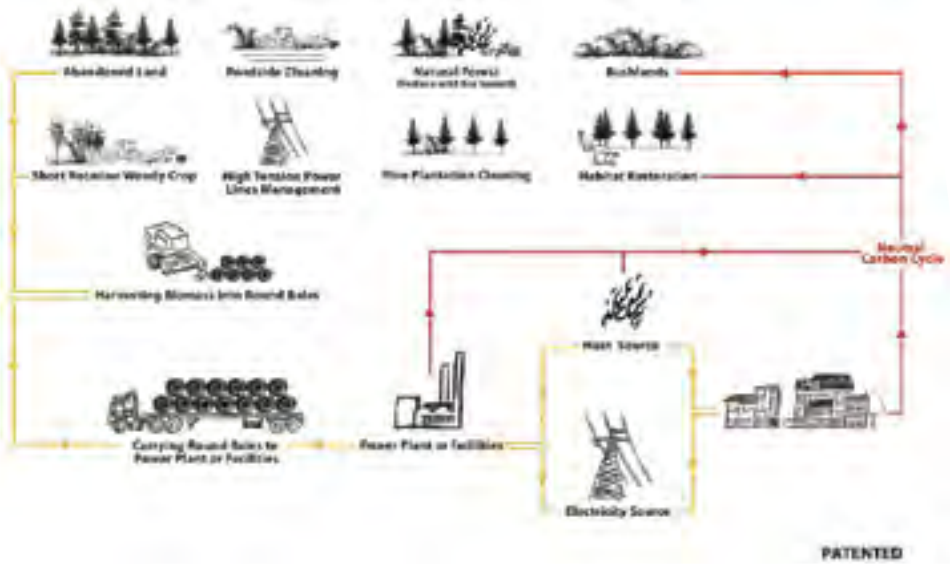
- From the middle of the field to the road.
- Bales can be picked up by a self-loading bale carrier. This carrier will collect the bales into the field, and drop the bales along the road or in the field.

From the road to the power plant

Once bales are dry, they can be picked up from the field, and sent to the power plant to be ground or burned. A regular flatbed conventional trailer can contain over 40 round bales per load.

Anderson Group
www.grpanderson.com

ANDERSON



Year of Foundation:	1988
Employee:	115
Main Sector of Activities:	Agricultural and forestry equipment manufacturing
Location:	Québec, Canada
Turn Over:	25 million US$
Quantity of Biobaler Sold:	50 since 2010 in Europe

ANDERSON BIOBALER™

Cutting down, compating & baling, all-in-one operation!
Harvest biomass efficiently while reducing ash content in the crop with is patented design.
Up to 40 bales per hour.

Suitable for "Short rotation crop" such as:

- Salix (Willow)
- Poplar
- Acacia
- Miscanthus
- Eucalyptus
- Pine

Remove invasive plant
Electric power lines cleaning
Abandonned agricultural field restoration
Fruit tree care operation

Collection of agricultural biomass residues

- Corn
- Cotton
- Sugar canes

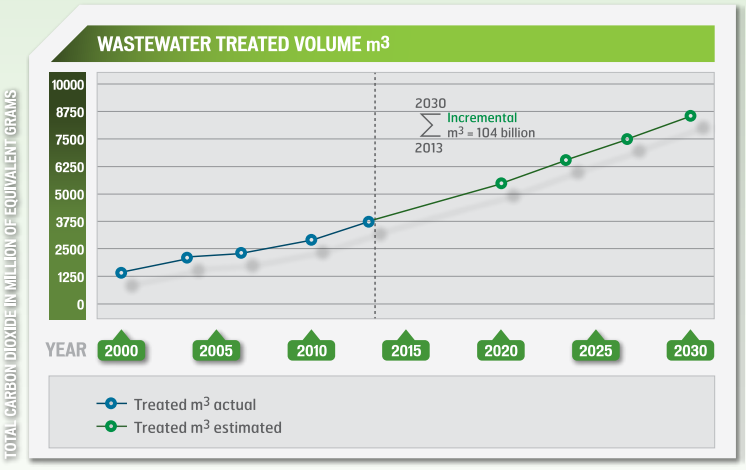
WWW.BIOBALER.COM

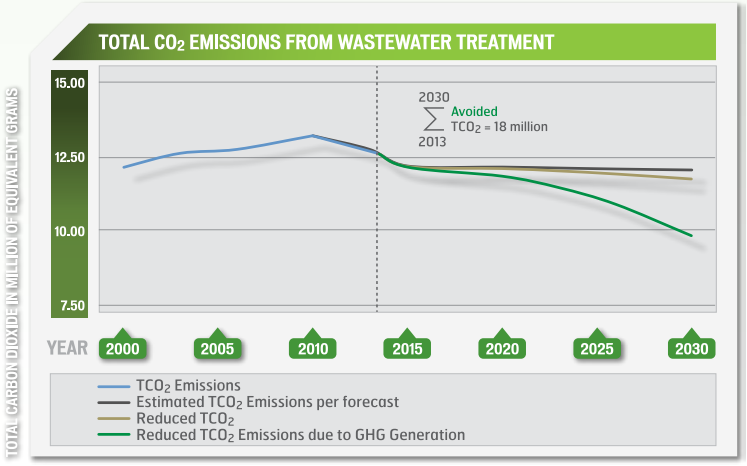
THE OUTLOOK FOR WATER TREATMENT IN MEXICO

Mexico has set many game-changing targets, such as achieving 100% wastewater treatment by 2030. The biggest challenge Mexico faces is meeting this goal while avoiding adverse environmental effects and an increased carbon footprint

Mexico, as the fourteenth largest economy in the world, plays a key role in global policy development on climate change. Since 2006, Mexico has been firmly committed to implementing sustainable practices that mitigate the effects of climate change, and has shown that commitment by setting aggressive goals for 2030.

The country is working to strengthen its regulatory framework and infrastructure to tackle this problem, and has set a target of treating 100% of all wastewater by 2030. This goal represents a sharp increase from what is currently achieved, where only 47.5% of sewage is treated in more than 2,200 treatment plants.





Despite the obvious benefits of meeting this target, the increased volumes of treated water present us with the paradoxical challenge of finding the right solutions to mitigate the adverse effects upon the environment and associated carbon footprint growth caused by a proportional increase in power consumption, sludge production and GHG emissions. In a nutshell, this commitment means treating an additional 104 billion cubic meters, which would require 68 thousand GW of energy.

In this regard, Mexico's Ministry of the Environment and Natural Resources (SEMARNAT) has recently published the National Climate Change Strategy, which assumes huge investments in new infrastructure built around cutting-edge technologies for wastewater treatment, consolidated management of solid waste and the harnessing of renewable energy.

Vert Energy was set up with the objective of making the best technologies available to Mexican municipalities and companies demanding a range of water treatment solutions. Vert Energy offers proven technology platform that reduces energy usage and operating costs incurred by water utilities while also producing a positive effect upon the environment. Using our proprietary wastewater treatment technology, we can reduce residence time and volume by up to 60% compared with biological treatment, resulting in smaller facilities and faster treatment. We design, build and operate WWTPs with lower investment and operating costs that guarantee savings for our customers.

Vert Energy
www.vert-energy.com

Vert | Energy SOLUTIONS

RIVER BASIN ENERGY INC

Coal economics from biomass?

Coal: a million years of energy in a convenient package. It is cheap, it is abundant, it is easy to use, it is dirty.

Coal is compelling, but it comes at an environmental cost, with CO_2 emissions from coal growing faster than any other fuel[1].

Conventional solutions to decarbonisation involve massive spending on carbon sequestration or conversion to biomass fuels at high cost. Drax, Europe's largest coal power station, is in the process of spending $1.2 bn just to be able to burn wood pellets[2].

What if the conversion to biomass came at no capital cost? What if the fuel itself were no more costly than current biomass fuels?

We could save money and the environment.

River Basin Energy's bio-coal fuels do just that.

For more information contact us:
info@riverbasinenergy.com

Sources:
(1) "CO2 Emissions From Fuel Combusion", IEA, 2013.
(2) "Drax begins £700m conversion to wood pellets", Financial Times.

DRIVING CHANGE THROUGH INNOVATION

Leading automotive technology company DENSO aspires to be a company indispensable to society

Each time we surmount difficulties such as past year's catastrophes, we are reminded that the DENSO Group is supported by numerous stakeholders, and reflect deeply on the importance of the words "company sustainability."

The various events that unfolded in 2011 were also a catalyst for us to thoroughly discuss what we must do to ensure the DENSO Group remains indispensable to society and for us to re-examine the value of our existence.

A society with no traffic accidents
An advanced automotive society will enable people to enjoy the pleasure of moving freely through mobility with virtually no traffic accidents and environmental impacts.

DENSO is a leading supplier of advanced automotive technology, systems and components for all the world's major automakers. The company employs 130,000 and operates in 35 countries and regions. Global consolidated sales totaled US$38.1 billion for fiscal year ended March 31, 2013.

At present, approximately 1.3 million people worldwide lose their lives in traffic accidents every year. Creating a society with no traffic accidents is the fervent wish of everybody involved in the automobile industry.

Since commencing research on airbag sensors in the 1970s, DENSO has commercialized numerous system products that utilize sensing technologies and also proceeding with the development of technologies that monitor a driver's physical condition and level of driving concentration and that provide any necessary warnings to the driver.

Based on these achievements, we will devote our utmost efforts to promoting the widespread use of our products and developing technologies that contribute to enhancing safety.

Fewer environmental impacts
The second key issue for the automobile industry is to reduce environmental impacts. It has been reported that CO2 accounts for approximately 80% of all emissions of greenhouse gases, a principal cause of global warming.

DENSO supplies basic products for powertrains for all vehicles that help to improve fuel efficiency, cleanse exhaust emissions and reduce noise.

DENSO developed and improved products from the perspective of "energy management" that strives for energy efficiency not only for individual components and units but also for the entire vehicle.

These products are also useful in reducing the burden on the engine and recovering and reusing kinetic energy.

On a different front, in 2011 DENSO and home builders jointly developed a home energy management system (HEMS)*, which applies the technologies cultivated by DENSO in automobiles for the efficient integrated control of energy in people's home living environments.

As energy conservation becomes increasingly important worldwide, the development of systems that link technologies from automobiles and houses will likely serve as a major step for creating a sustainable society.

** This system performs coordinated control of household EcoCute systems, storage batteries and solar power generation systems with plug-in hybrid cars and electric vehicles for efficient power generation, recharging and energy usage.*

Trusted by stakeholders

We strive to be trusted by stakeholders as well as the communities where DENSO undertakes its business activities.

We are currently considering our long-term policy in the run-up to 2020 and are undertaking repeated discussions that also encompass Group associates.

Each and every Group associate aims to sincerely respond to the expectations of our customers, suppliers, shareholders and local communities and to be told by numerous stakeholders, "If it's DENSO, we have a sense of reassurance."

Moreover, if all associates feel a strong sense of trust and take pride in working at DENSO we can truly be a company that is indispensable to society.

In the future as well, we will aim to be a trustworthy company in harmony with society and move toward the realization of a society in which people and cars ideally coexist.

DENSO
www.globaldenso.com

Home Energy Management system (HEMS) consists of a control unit and a 7-inch touch panel monitor, installed inside the house. The monitor shows real-time power consumption, helping to remind users to turn off appliances when they are not in use, which also helps them better manage electricity. The monitor can also show electricity consumption in terms of cost and the amount of CO2 emissions that are emitted, as well as historical data, which helps encourage users to be more aware of saving energy. Additionally, the system prevents the circuit breaker from tripping when there is a high electric load.

WHY DATE PALMS COMBAT DESERTIFICATION

Al Wathba Marionnet, a leading plant bio-technology company based in Abu Dhabi, explain how date palm groves can combat land degradation

Al Wathba Marionnet LLC is a leading plant bio-technology company established in Abu Dhabi in 1997, as part of the U.A.E. Offsets program between France and the United Arab Emirates. It is considered to be one of the world's most important producer of date palms through plant tissue culture technology.

One quarter of the world's population lives in dry-lands where desertification progresses fast.

The economical and social situation of the rural indigenous people degrades with the same pace, forcing them to migrate or to strive.

Combating desertification is a must for the development of these rural regions as it converts degraded lands into agricultural zones which in turn, allow the populations to access food supplies, promote local economical development, creates jobs, and contributes by its greenery to the fight against climate change.

Date palm is extremely connected with human life. Perfectly adapted to the harsh climatic conditions of these areas, it is one of the perfect tools to achieve this combat.

Date palm groves require workforce while dates are an easy-to-store rich staple food and basically all parts of the tree are inputs for by-products industry.

Subsidiary of century-old biotech company Marionnet S.A.R.L., France, Al Wathba Marionnet LLC is a renowned biotechnology firm established in Abu Dhabi, United Arab Emirates since 1997 specialized in the mass production Date Palms through Tissue Culture technology. Clients from private farmers to local governments and international organizations direct their procurements to Al Wathba Marionnet for their date palm plantation projects.

The company also regularly contributes to the projects of several NGO's like ICRISAT, UNDP, FAO and the ICRC mainly in the Sahel regions.

Today, hundreds of thousands of trees are producing millions of tons of dates in over 20 countries around the world in Africa, the Middle-East, Indian subcontinent, South East Asia, and Central America. Still, more are currently too young to bear fruits.

Careful planning

Its state-of-the-art technology grants Al Wathba Marionnet with true-to-type vitroplants of several economic varieties of date palms.

Mother offshoots used for propagation are carefully selected and genetically controlled independently by the G.E.V.E.S (Variety and Seed Study and Control Group), a department of the French Ministry of Agriculture.

Very strict production protocols are observed during the whole process from the laboratories to the greenhouses in order to ensure the quality of the plants whether on the genetic or phytosanitary aspects.

Such production protocols are constantly developed through internal Research & Development and cooperation with several International Research Centers. After a long process of around 30 to 36 months, the date palm vitroplants are fully hardened and ready for dispatch.

Planted in pots of 1/3 liter, they present 3 to 5 juvenile leaves along with a well developed root system allowing them to easily travel by air around the world and stand the environmental conditions upon arrival.

Airfreight is carried out in pallets loaded with boxes each set to contain 25 date palm vitroplants stacked in trays, easing manipulation.

It's noteworthy that the U.A.E. Ministry of Environment and Water controls all our shipments and issues internationally recognized phytosanitary certificates attesting the healthiness of our plants. Typically, the first harvest of dates takes place around 3 to 5 years after delivery.

Al Wathba Marionnet also provides consultation and in-house training programs for technicians, farm or project managers on post-delivery agricultural practices, pest management, irrigation techniques and plantation management.

Consultation on harvest and post-harvest can be arranged as well.

Al Wathba Marionnet LLC is proud to contribute to the development of arid and semi-arid regions around the world to fight against desertification and improve the quality of life of the indigenous populations while helping the expansion of afforestation, which is inevitable to help responding to climate change.

Al Wathba Marionnet LLC
www.awm-datepalm.com

WATER SAVING MEASURES START AT HOME

Is water scarcity a matter of treatment and storage, or change in consumer behaviours?

GreenDry, the "*Water Saving Product*", is a water-substitute solution that cleans dirt, while it polishes surfaces such as iron sheets, pneumatics, plastic, glass and general nonporous-surfaces.

Water is becoming an increasing valuable commodity. Increased demand and pollution are making access to clean water a priority for government, but erratic weather events linked to climate change make this an even tougher task.

Water Saving Behaviours
Water usage can be differed from people who operate it (private or governmental suppliers) or society (residential and industrial). For both, Best Consumption Practices can be related as Reengineering or Behavioural practices.

For residential users, these are some Reengineering improvements:

- Eco-Plumbing
- Low-flush toilets / showerheads
- Pressure reduction
- Grey water use (home recycling)

Behavioural examples would be: *to turn off faucets while washing, brushing or cleaning, do the laundry just at full capacity, early morning garden watering, or simply as Dry Cleaning your car to save up to 600 litres (150 gallons).*

GreenDry
www.greendry.com.mx

2013: A year of floods

Eastern Australia. Argentina. Central Europe. Southwest China. Southeast US. Canada. North India.

A dozen countries have had floods within this year's lapse, an overall loss of $24bn USD; the very same amount for which Michael Dell bids for a buyout over the Dell firm, or the equivalent to the revenues of Microsoft in 2013's Q2.

Mexico's wastewater treatment plan

What is to be the largest wastewater treatment in the world will be treating 2,000 litres per second, requiring an initial investment of over $62 million USD. This will 'only' treat 60% of Mexico City's inhabitants' wastewater, what is the same for 10.5 million people.

This could become a 35% of inhabitants' wastewater for the total 30 million population forecast in the Greater Mexico City in 2050.

For 2050, the United Nations has an estimated 4.60% population growth rate for Mexico (156,102 M), compared to Germany's -1.22% (72,566 M), United States 3.73% (400,853 M) or Europe's -0.26% (709,067 M).

Water Scarcity throughout the World

Water scarcity occurs when the demand for water from all sectors is higher than the available resource. To date on Earth, just 2.5% is fresh water and from these, just 31.8% is available at groundwater or lakes and rivers.

Currently, one third of the world's population lives in countries where there isn't enough water or its quality has been compromised. Yet, this quantity is expected to grow up to two thirds of the world's population by 2025.

There are two types of water scarcity:

- Physical Water Scarcity, when there's not enough to meet our needs
- Economic Water Scarcity, when institutional or financial capital limit access

The 3 Gorges Dam - China

China's longest river, the Yangtze, is to feed the largest power station dam in the world with a peak stream flow of up to 48,000 m3 per second. So how much is this? It's over five times what US estimates, 9,044 m3, of renewable internal freshwater resources per capita, in a whole year, according to the World Bank.

Dams are often considered "sustainable hydropower" or even "green hydropower", however, dams have their environmental impact too. Changing ecosystems, river dynamics, sediment cycles – by increasing soil salinization, and with carbon and oxygen cycles being altered, an impact on groundwater and surface is inevitable due to changes with physical and geochemical aspects.

How much do dams transform ecosystems? According to WCD (2006), from the 108 most important rivers of the world, 46% of their water flows into a reservoir before it continues its way to a natural lake or sea.

TIMELY AND EFFECTIVE SOLUTIONS TO AIR POLLUTION

Tired of increasing pollution in major cities and sea ports and looking for practical solutions? There is a proven scientifically-based way to curb air pollution, ground ozone formation and acid rains. It lies within a suite of ultrafine titanium dioxide (TiO_2) catalyst technologies, making such modern essentials as power plants, cars and fuel processing facilities safer for both the consumers and the environment

Responding to air pollution means addressing climate change

In response to the growing concerns about the environment, increasing population and soaring healthcare costs, regulation against pollutants such as nitrogen oxides (NOx) and sulphur oxides (SOx) is now spreading globally.

NOx and SOx are toxic gases generated during the processing of natural gas, crude oil, coal gasoline and diesel fuel. NOx, in turn, is formed when harmless oxygen and nitrogen gases combine during combustion processes to form oxides of nitrogen. Nitrous oxide (N_2O) of the same family, known as "laughing gas", is also a very potent greenhouse gas that contributes to climate change. SOx enters the atmosphere in much the same way and has its origins in the production of fuel from oil or natural gas.

Both NOx and SOx are harmful to humans and are strictly regulated. They can cause respiratory problems, contribute to smog, ground level ozone formation and acid rain.

The World Health Organization warns that urban outdoor air pollution is responsible for 1.3 million premature deaths worldwide per year. By 2050, according to the OECD, air pollution is anticipated to become the biggest environmental cause of mortality worldwide, overtaking the lack of clean water and poor sanitation. The number of premature deaths from exposure to air pollution could reach 3.6 million every year, mostly in China and India.

Good for the environment – good for business

Power plants, diesel cars and trucks, marine vessels and fuel processing are the main sources of modern-day air pollution.

However, they provide us with the essentials and conveniences of modern life, and there is a growing need to make these technologies safer, both for the environment and our health. That's where TiO_2-based NOx abatement technologies are proven to be extremely efficient in capturing these harmful gases at the source.

While controls at source are the primary form of pollution control and have the most significant effect, they are not a complete and total solution. There needs to be a secondary layer of protection for the particles that escape into the atmosphere.

The good news is that both levels of protection are available and ready to be deployed, bringing a much desired "breath of fresh air".

Cristal has more than 25 years of experience in TiO_2-based environmental catalysis, being a leader in NOx and sulphur removal technologies since their inception, contributing to a cleaner world. Cristal's ultrafine TiO_2 CristalACTiV™ solutions are used in several different catalytic platforms including extruded, coated and granulated forms and can be found in installations across the globe.

These products are now widely used in the automotive industry around the world, and catalysts based on Ultrafine TiO_2 from companies like Cristal could be found in many of the world's most recognizable brands of trucks.

A secondary level of protection is delivered by the next generation of CristalACTiV™ photocatalysts that can be used in either paints and coatings alongside major roads or production facilities, or in the building materials themselves that harness the power of the sun to purify urban air. These materials neutralize harmful NOx components that are already in the atmosphere by transforming them into harmless by-products that can be washed away with the rain.

The good news is that regulations are tightening quickly to halt environmental offenders. It's time to make a responsible investment in environmental technologies – before the lack of decision affects their ability to do business.

Cristal
www.cristalactiv.com

CRISTAL

Cristal is a major titanium dioxide (TiO_2) producer and a recognized leader in Ultrafine TiO_2-based products which are at the core of environmental catalyst technologies. Cristal produces CristalACTiV™ Ultrafine TiO_2 for many catalyst applications, helping businesses and cities meet stringent environmental regulations, improve air quality, and reduce the risk of respiratory illnesses related to air pollution.

For more information visit our website: **www.cristalactiv.com**

COLOMBIA'S FLOATING PUMPS OFFER EXTREME RAIN SOLUTION

Extreme weather events are requiring countries to heavily invest in adaptation technologies, one of which is ETEC's latest pumping system

Evidence of climate change and global warming like the increase of the sea level, intensification of heavy rains, hurricanes, temperature changes, among others in both, local and global areas increase the need of environmental solutions that can cope with high water levels.

Companies and governments that strive to use forward-looking floodplain management practices to minimize flood and erosion damage for all residents, property and infrastructure are required worldwide.

Based on these consequences, it appears likely that global warming seems to be reclaiming what man has taken away from the earth.

Adopting proper irrigation management strategies can reduce the effects of hyper-hydration but emergency situations like the ones recently faced require an effective solution when it comes to drain water and avoid the permanence of it in a state of flood affecting the soil, the ground water and the crops.

Due to the increase of flooding cases around the world and the need for immediacy to control the flooding in a short time period and avoid all these consequences; ETEC S.A. a Colombian company, adjusted its patented engineering floating pump solution to help alleviate the effects of extreme flooding.

The majority of agricultural crops are negatively affected by the excess of water caused by rain or insufficient drainage. This hyper-hydration is devastating for the crops, causing production losses, ground water contamination, yields reduction and the concentration balance of carbon dioxide and soil oxygen.

Flooding conditions will not only affect crops and wild plants, but will kill the organisms in the soil that

Photo: © www.aero-digital.net

ETEC develops solutions to ensure the efficient and proper handling of large water volumes required in aqueducts, agricultural and aquacultural farms, flood control and irrigation systems.

Haiti floods. Photo: © UN Photo/Logan Abassi.

contribute to nutrient uptake to growing crops; besides the longer the water stands around the plants and crops, the more dehydration and the worse the damage is likely to be.

The floating pump in its different sizes (12", 24", 36", 42", 48" and 60") is the ultimate solution designed to assure the proper massive water evacuation. It can be installed and placed in operation, without the need to make civil constructions during a quick installation and start up time. It manages flows from 300 lt/seg up to 8000 lt/seg.

ETEC pumps can handle huge flows of water and are easily assembled in disaster situations. Photos: © ETEC.

ETEC´s designs and applications have been contracted by governments in North and South America and agricultural private companies around the world. These include national irrigation projects in the Middle East and South East Asia. Here, pumping water fast and efficiently is needed for conservation and the protection of houses. During the summer of 2010 Colombia suffered the most severe flooding of recent years.

The north and central part of the country were damaged by the continuous heavy rain and the increase of the river levels.

Similar circumstances were faced in Nebraska, USA, and Choné in Ecuador were facing the same situation. The solution was to efficiently and rapidly evacuate the water.

The easy mobilization of equipment due to its self-contained design, the large volume of water that they evacuate, it buoyancy and adaptability to the situation make this technology almost unique proposal worldwide.

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Albornoz, Km 4 Vía Mamonal, Cartagena - Colombia

ENERGY AND WATER SOLUTIONS FOR THE NEXT 100 YEARS

Ensuring access to clean water & clean energy in its various forms are some of the biggest challenges facing humanity. They affect health, progress, prosperity, and social stability

Patented technologies developed and promoted by companies under the umbrella of Eurosport Active World Corp (EAWC) produce sustainable relief to these threats, especially in regions of the world where access to drinking water and energy are difficult or even impossible.

EAWC is a green energy production, water generation and water purification company. Its holdings & partners develop, manufacture, distribute and help to operate water generation and provide technical assistance and the know how on real environmental solutions such as Waste to Energy (W2E) and water scarcity mitigation.

The company also offers related services worldwide like maintenance, education & training and optimization programs. It has been said that new technology and better strategy could cut data centre emissions by 88%. In today's world of sophisticated technologies, industry is faced with the ongoing challenge of satisfying demand for new products, more choices and greater volume.

As demands increase, manufacturers are responsible for solving the economic and environmental challenges that accompany this growth. For example, one of the realities of manufacturing is the inevitable accumulation of hazardous and nonhazardous waste. Even with the use of pollution prevention techniques, vast volumes of waste in every form are produced in the industrial world. EAWC Technologies is the newest state-of-the-art concept to promote, develop, manufacture and commercialize environmental technologies.

Using our clean energy technologies, including waste to energy (W2E), you are using renewable energy in place of fossil fuels. This not only saves energy costs, but also allows the creation of carbon credits for reduction of CO2 in the atmosphere. This is an additional means in which to tackle climate change. These credits can be sold into the compliance market or the voluntary carbon markets, depending on the project type and location.

The sale of these credits creates an additional revenue stream that will support your clean energy project. Most of the technologies we use qualify for creation of carbon credits, including: waste heat to energy, landfill gas to energy, electricity generation from solar, geothermal and biomass that replace the use of fossil fuels. An approved United Nations vendor, EAWC Technologies is convinced that there could not be sustainability without a solid platform of R&D.

Therefore partnerships with leading universities and institutes are now in place to ensure the performance, efficiency and innovation of our solutions.

OUR SOLUTIONS:

PLASMA ASSISTED PROCESSES:

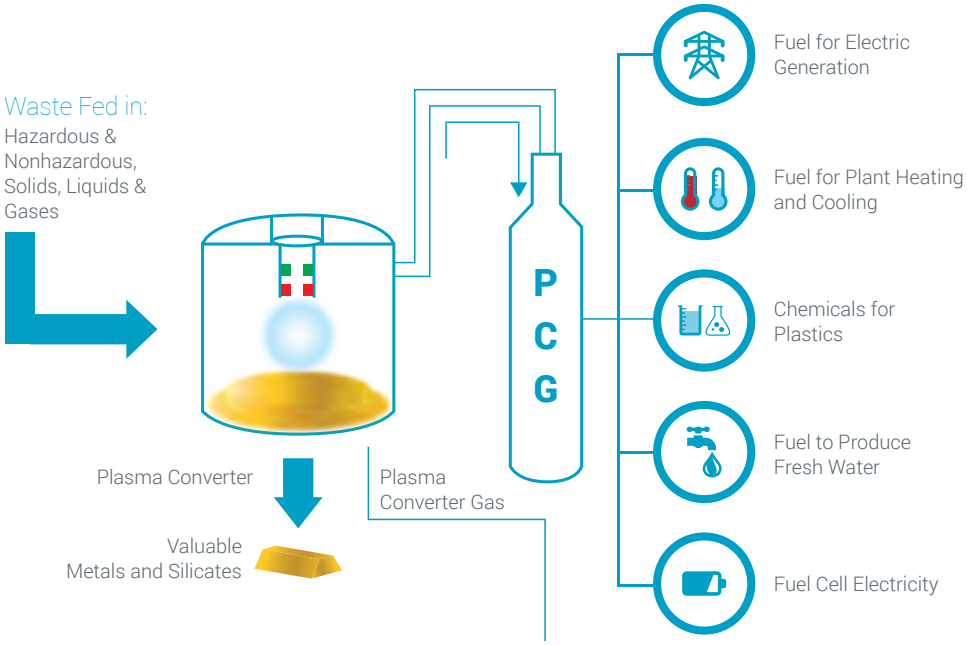
- CONVERTER MODE
  The PCS is simply a gas that the converter ionizes so it becomes an effective electrical conductor and produces a lightning-like arc of electricity that is the source of the intense energy transferred to the waste material as radiant energy. The arc in the plasma plume within the vessel can be as high as 30,000°F or 16.650°C.

  The PCS process is not a burning process, and it should not be confused with an incinerator. The "Synthetic Gas" can be used to power an internal combustion engine or a turbine to run an electricity generator. The Plasma Converter is computer controlled, easy to use and operates at normal atmospheric pressure, very safely and quietly. Significant valuable resources are created from the use of the Plasma Converter.

- **GASIFICATION:** "GASIFICATION MODE" is suitable to completely gasify target liquids for the maximum conversion of liquid to fuel and is most suitable for oily or hazardous wastes that require elimination. The waste is converted into Syn-Gas and carbon precipitates. In this mode the liquid is completely gasified.

- **STERILIZATION:** "STERILIZATION MODE" is intended solely to sterilize target liquid wastes such as sewage,

Figure 1: Materials previously regarded as waste are recycled and processed as feedstocks to make commodities.



agricultural wastes or any effluent where eliminating bacteriological activity is beneficial to convert the waste liquid into a fertilizer and irrigation water. These result in the production of Syn-Gas, carbon precipitates and the same quantity of sterilized liquid. In this mode the liquid is retained but completely sterilized.

THE HIT WASTE MANAGEMENT TECHNOLOGY (ENVA): Conversion of Low-Pressure Steam (0.6 – 5 bar) into Electric Energy (CO2-free). The generated electricity can be fed into the grid in a decentralized way via the medium-voltage and low-voltage network thus leading to high security of supply.

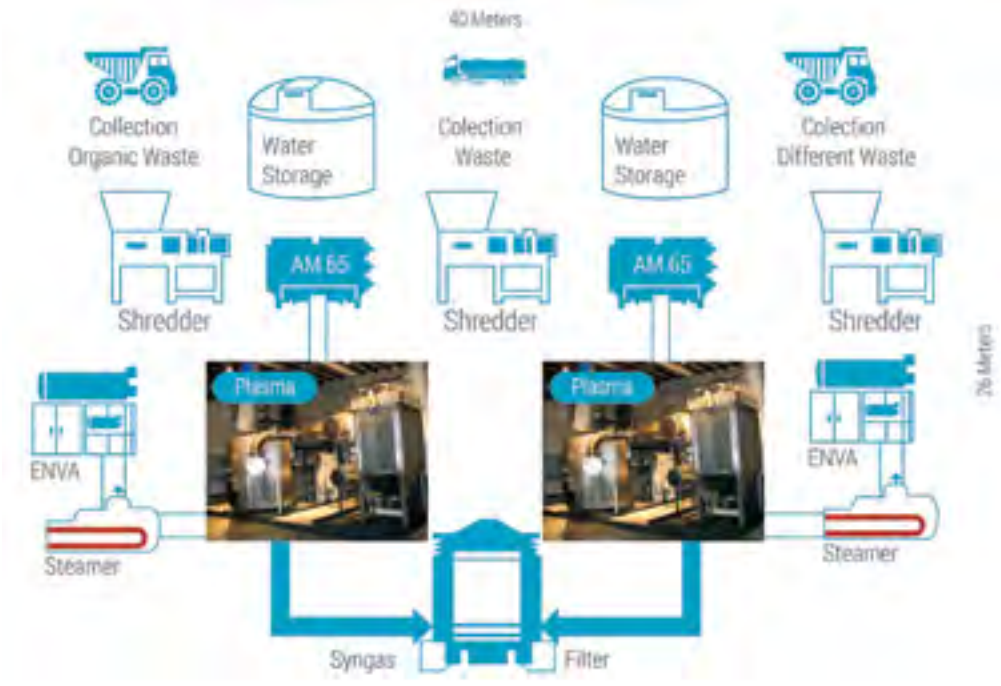
ATMOSPHERE WATER GENERATORS (AWG): A single machine can generate up to 10,000 gallons of water per day, thus providing the water supply for entire villages. The basic technology used for AWG originally came from the mining sector and utilizes humidity to produce drinking water by means of condensation.

SOLAR POWER WATER TECHNOLOGIES: 10 m3 to 200 m3 per day of pure drinking water represent very significant volumes thus having a real impact on the personal lives of individuals and on the social environment of communities with long lasting positive implications.

EAWC TECHNOLOGIES
www.eawctechnologies.com

EAWC Technologies
real solutions for real needs

Figure 2: EAWC Waste Management Process



GLOBAL KNOWLEDGE FOR LOCAL CLIMATE PROJECTS

Financial resources are moving into climate adaptation and mitigation on an increasing scale in the lead-up to a new international climate agreement to be forged in Paris in 2015. There is a window of opportunity to take concerted, cost-effective action to reduce greenhouse gas emissions

"Accurate, consistent and internationally comparable data on GHG emissions is essential for the international community to take the most appropriate action to mitigate climate change, and ultimately to achieve the objective of the Convention" - UNFCCC National Reports guidelines.

Greenhouse gas emissions reduction activities can be summarised as:

- Replacing fossil fuels with renewable energy
- Sequestering carbon directly, by planned stabilising of natural environment
- Sequestering carbon indirectly with agriculture and the use of building materials that absorb greenhouse gases
- Making communities energy efficient and sufficient through changing people and organisation's energy usage behaviours

Anecdotal evidence indicates that many eco projects are foundering on the rocks of slow and inefficient climate finance.

"We develop long term sustainable reforestation programs in conjunction with agro and eco livelihood programs for local people to ensure long term protection. We are finding that limited financial support, difficult access to donor agencies, and time lag between application and approval/ rejection prevents implementation" - Indonesian Rainforest Foundation.

It is not only habitat that has been sacrificed on the altar of financial gain, investors have been loath to fund GHG reducing research and technology. For example, market-ready renewable energy, bio-composite materials to replace plastics, carbon sequestering agribusiness, energy efficient construction technologies have been unable to gain funding.

New pathways are required and lightweight governance mechanisms for mobilising climate finance to accelerate greenhouse gas emissions reduction.

Micro and direct finance can provide a kick start to climate mitigation projects and technology innovation.

Greenwashing has to be curbed. It is imperative to provide robust processes engaging relevant climate professional organisations and individuals, to ensure that money is effectively spent.

The pooling of knowledge and experience about climate finance and science can expedite emissions reductions, by making finance accessible to small projects in both developing and developed countries. Climate change does not respect borders, and urgent action and resources, is required for projects in every corner of the globe. The expertise, technology, people and organisations are already in place.

It is time for an international initiative to fund the projects that are ready to go, with technology that has already been developed. Why continue to try to fit sustainable technology projects to inadequate guidelines that can be politically exploited or easily corrupted? The approach has to be to fit governance from appropriate professional scrutiny directly to the projects.

Funding channels and instruments can be applied to fund local eco-projects and innovative technology.

Automated approvals process

Automated decision-making allied with professional evaluation, can provide simple pathways for approval to mobilise climate finance. Online workflows can be backed up by specialist knowledge, experience, case studies and skill sets to enormously speed up climate finance delivery.

A common search taxonomy can ensure that scientific and economic analysis can be recorded and made accessible to get the right information to the right people at the right time in support of climate funding approvals processes.

Simple intuitive interfaces can facilitate the uploading of project data, photos and text, subsequently linked to geospatial and scientific information, analysis and other data.

A web submissions process can enable real-time feedback for rapid clarification of information, ensuring that project approvers gain a real sense of the value of a project to the local community and economy, as well as a reasonably accurate estimate of the associated emissions reduction.

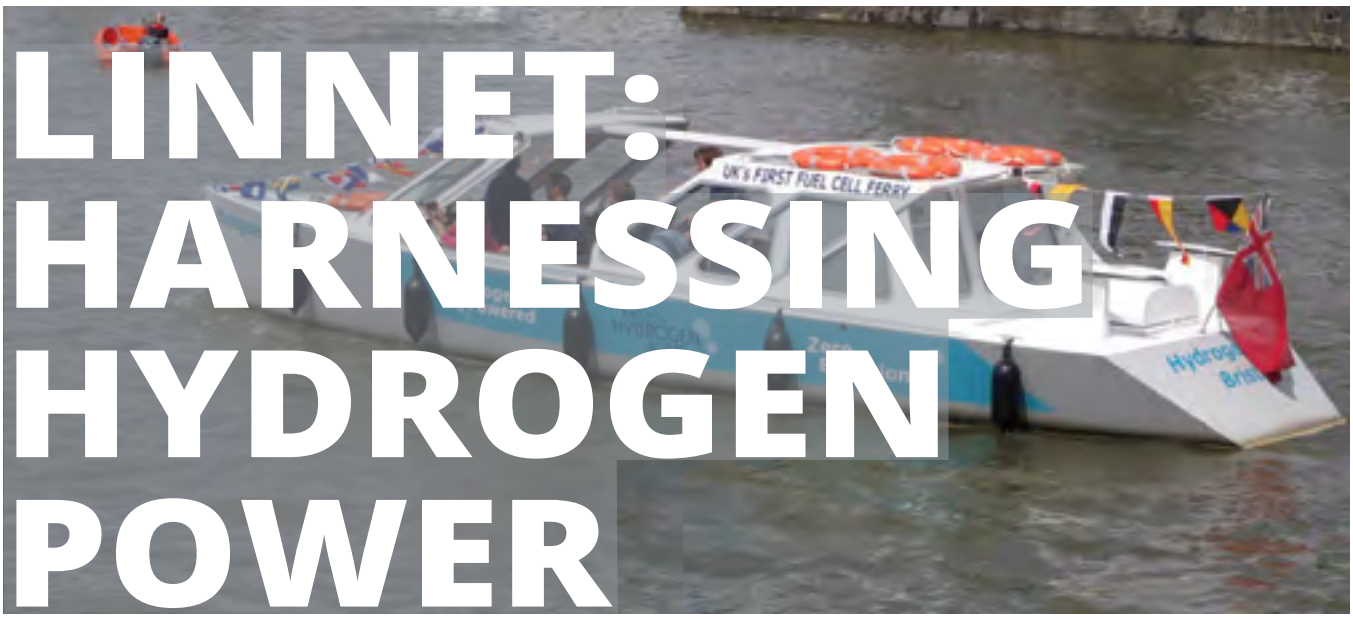
Cloud hosted reporting by project, ecology, climate systems, as well as spatial location, can provide insight into emissions reduction measures, local ecologies and micro climates.

Climate finance and scientific expertise can engage in capacity building and transfer of technology, ensuring that existing information can be shared to enable accurate assessments of climate change risk to human habitat.

Technology can place a real value on the natural environment to the global economy.

Trac Car
www.trac-car.com

LINNET: HARNESSING HYDROGEN POWER



Hydrogen is one of the most abundant sources of natural fuel available, offering the potential of an end-to-end zero-emissions energy solution

Delivering reliable emission-free power with the AuriGen high-efficiency fuel cell system. The award-winning AurigaGen hydrogen fuel cell combined UPS and back-up power system provides a clean and quiet alternative to conventional battery-powered systems and diesel generators. www.linnet-tec.co.uk

Leading the clean revolution
Linnet's core business is UPS, Generator and Central Battery Systems, everything that is required to ensure continuous power. At present most UPS systems utilise lead acid batteries to provide power during a mains outage.

To provide long runtimes many systems use a diesel generator in association with the batteries and this has several drawbacks. Our need to reduce dependency on fossil fuels along with our obligations regarding carbon emissions necessitates alternative approaches to conventional thinking.

Hydrogen, being the most abundant natural fuel source available to us, provides a wonderful opportunity to address these issues. Auriga Energy are pioneers in this field and our collaboration has led to the development of the AurigaGen system for back-up power applications.

We can tailor our system to suit numerous applications, both primary power and stand-by power. Our modular architecture allows unlimited possibilities across many industries.

Linnet Technology won a 'SELECT' industry award for Best New Product 2012. Fergus Ewing (Minister for Energy Enterprise and Tourism) visited our first installation at the systems integrators firm Sabio's offices in Glasgow City Centre. We are in the process of agreeing a similar installation in Sabio's London offices.

Energy efficiency potential
Fuel cell systems are much more efficient than diesel generators and do not generate any toxic waste that has to be cleaned or disposed safely. Hydrogen can be generated near the point of use from other renewable sources such as water power, wind and solar, thereby providing an end-to-end zero-emissions solution.

An ever increasing problem worldwide is the need to store energy and use it when there is demand rather than when it is generated. Converting electrical energy into hydrogen via electrolysers enables power to be stored as gas and then used when needed via fuel cells.

At present we are spending huge amounts of money to take wind turbines off-grid when certain conditions occur and that energy is lost.

The "AurigaGen" Hydrogen Fuel cell
The AurigaGen is a high-efficiency modular electricity generator system that can be adapted to meet multiple applications, for example the system currently powers a water taxi operating in Bristol as well as providing back-up power to a call centre located in Glasgow.

The main components of the systems are identical, however the output element is tailored to specific needs of the application.

The system has proven reliability and utilises the state-of-the art fuel cells. With safety assured, the system can be installed indoors. The AurigaGen delivers quiet, stable continuous power with no pollution for a clean environment.

What sets us apart from the competition?
The flexibility and architecture of the proven AurigaGen system is the key. We can design, build and install systems in a very short timescale.

We are looking to introduce our innovative UPS/backup power system to potential customers and key stakeholders. In support of this, we will welcome appropriate introductions and publicity.

Linnet
www.linnet-tec.co.uk

AURIGA energy

TRAC-Car

Trac-Car and Sparx Systems
Collaborate to Innovate
Energy and Greenhouse Models
for realtime technology

SPARX SYSTEMS

MEXICO'S HYBRID COMPOSTERS BID FOR SMALLER CARBON FOOTPRINT

Leading Mexican company Compostamex presents three case studies in how to cut carbon emissions and speed up the composting process

Case study 1:
First case is a co-composting operation by the Mexican pacific coast, very close to Manzanillo port.

This operation is installed at a pineapple and papaya 240 acre operation. Its reason to produce compost, vermicompost and vermicompost tea is to improve soil quality and of course fruit quality, so as to avoid the use of chemical pesticides in the production process.

This company "Frutas Frescas Tecomán" also sells all three products to other fruit producers of Tecomán region. Compost is being produced in aerated windrows and vermicompost in beds, with a roof system of plastic and shade cloth. Feedstocks are pineapple crop residues, coconut fiber, papaya crop residues.

An important challenge for this fruit company is to make it a true sustainable operation, reduce production costs and improve the soil quality retaining carbon. The payback is calculated in 24 months.

Case study 2:
The second case is also a co-composting operation at Cancun, Mexican´s Caribbean coast.

This operation is installed at a 4,000 room resort operation, Palace Resorts, and its reason to produce compost, mainly is to reduce the high costs of sending their 2,500 tons per year of organic residues to the landfill, so as the use of vermicompost as a source of nutrients, beneficial micro flora and substrate for their nursery, golf course and gardening of their hotels.

Compost is being produced in bioreactor, and vermicompost in beds, with a roof system of plastic and shade cloth. Feedstocks are green and brown gardening residues, food wastes from the kitchen and food scraps from the dining rooms.

In the first stage, the co-composting operation takes care of 40% of the total organic residues, due to the distance of the other 2,600 rooms in other hotels from the group, which are located in the Mayan Riviera.

Probably we will build one composting operation per hotel, due to the logistics, or build strategic operations to receive the organic residues from two or three hotels.

The Palace Resorts group, made the commitment at COP 16 (was presented at Palace Resorts convention center in 2010) to take serious actions in terms of climate change reducing their carbon footprint. Co-composting operation is a reality of their actions to reduce GHG emissions.

Besides that, the project will pay its investments by savings in 18 months at most.

Case study 3:
The third case is a composting operation at Chiapas, near the Mexican South Pacific coast.

This operation is installed at an African Palm oil extraction facility, Oleomex Group, and its reason to produce compost, mainly is to reduce the high costs of chemical fertilizer, use their organic residues and transform them into stable organic matter which will improve the soil properties so as the oil´s quality and yields.

The company is committed to be certified in RSOP (Roundtable in Sustainable Oil Palm) by 2020 at most; their actions related to avoid chemical fertilization and composting of their organic residues are very valuable to obtain that certification.

The present and future of México in terms of composting organic residues is very much related to hybrid technologies, which adds in several cases sustainability, so as reducing carbon footprint.

Population, government and private companies are increasing exponentially their interest in composting. Composting industry in México is growing rapidly and strongly.

Compostamex
www.compostamex.com

Compostamex is a world-class Mexican company specializing in providing solutions for the processing of organic waste composts and developing high quality carefully monitored aerobic processes.

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SOLUCIONES SOSTENIBLES

W.GIERTSEN HALLSYSTEM

Wide range of pre-fabricated, re-deployable buildings.

W.Giertsen HallSystem AS has been a leading supplier of halls for use in industrial, leisure, peacekeeping and emergency relief operations since 1967.

We cover the world

OUR HALLS

"We have delivered and mounted relocatable rubb halls all over the world, from the frigid Svalbard in the Arctic Circle to the burning heat and windy shores of Namibia. From equator at the Horn of Africa to the altitude in Chile and to the monsoon in the South Pacific."

W. Giertsen Hallsystem manufacture a wide range of standard, pre-fabricated, re-deployable buildings which are used for a number of purposes including port and industrial warehousing, aircraft storage and maintenance, and sports and recreational events.

In addition, we have extensive experience providing rapid-deployment buildings and shelters for emergency relief operations to customers' demanding high standards of safe and secure delivery.

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GIERTSEN INTEGRATED SOLAR POWER

GISP is a plug and play solution, based on state of the art components to ensure sustainable energy and limited maintenance. The green electrical power eliminates the carbon footprint.

The payback time for investing in GISP is influenced by various parameters as diesel cost, life span of diesel generators, logistic programs, maintenance, spare parts, security transport and miscellaneous.

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LATIN AMERICA'S SEARCH FOR CLEAN TRANSPORT SOLUTIONS

Mexico-based transport business Dina Camiones explains how it is cutting emissions through the use of CNG in public transport

Sustainable transport enthusiasts may see Latin America as a region that, in line with concrete actions to reduce greenhouse gas emissions, is undergoing what could be called a boom in transit systems renewal.

Across the region, an unprecedented transformation process is taking place towards improving service quality for passengers. This shift includes important changes in infrastructure to meet the needs of society, a stronger engagement among different stakeholders and the community, which are the end users of these services.

Federal and local authorities are also giving priority to urban mobility. Further, service suppliers are changing business models from owner-operated to incorporated companies and/or limited liability companies.

This transformation process calls for the emergence of new business models, based on duly organized companies – incorporating legal, administrative and financial elements – in order to provide professional, efficient and profitable services.

At DINA we have adopted innovative business models throughout the LATAM region as part of our commitment to the environment and sustainable mobility.

DINA provides transportation solutions, manufacturing vehicles powered by Compressed Natural Gas (CNG), while offering superior cost/benefit ratios, better performance, reduced energy consumption, lower emissions as well as lower maintenance costs, spare parts and after-sales service.

Conacyt support

We are committed to enhancing the life quality for future generations and their environment through the development of Sustainable Transportation. DINA with the CONACYT support is currently developing a NAMA that guarantees GHG reduction through the replacement of diesel-run urban public transport units with new CNG technology in cities and metropolitan areas where NG coverage and distribution is available.

The name of this project is: "GHG emissions reduction through the use of CNG in public transport."

Mexican context

The energy and transport sectors were responsible for more than 70 percent of greenhouse gases in Mexico in 2006. Mexico's energy sector was heavily reliant on hydrocarbons, which represented 90 percent of total energy consumption and fueled over 70 percent of installed power generation.

Furthermore, Mexico's transport emissions increased by 27 percent between 1990 and 2005, accounting for approximately 18 percent of Mexico's total emissions in 2005. In addition, high levels of urban air pollution, exacerbated by inefficient transport, represent a major health and environmental concern in Mexican cities.

DINA Camiones is an OEM specialized on vehicles with advanced technology. DINA is a 100% Mexican Company with 60 years of experience as a manufacturer of Buses and Trucks, offering sustainable solutions for public transportation through custom made products, with the latest technology for vehicles, accomplished by our R&D department *Transportation Expertise by Dina*.

To address the challenges posed by climate change, Mexico has publicly committed to reducing its Greenhouse Gas emissions. The country had ratified the UN Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol, and was one of the first developing countries to commit to a specific carbon reduction target through the use of clean and efficient technologies.

Dina's use of CNG contributes to mitigate GHG emissions 80 tCO2e.

On one hand, savings of at least 35% on fuel (compared to diesel) are achieved and on the other, we find significant emission reductions of particulate matter by 95%, as well as 90% of NOX, and 22% GEI, mitigating health risks. These motors are 10 times quieter than conventional diesel engines.

DINA and Autotransportes Guadalajara - El Salto Company had been working since 2011 in a successful project to promoting the introduction of 50 CNG Buses in Guadalajara, Jalisco.

This collaborative work has included several phases (2011-2013):

- Fuel analysis
- Buses prices
- CNG Supply
- Characteristics of natural gas
- Bus performance
- Funding access

Dina Camiones
www.dina.com.mx

Transportation Expertise

by DINA

Sustainable Line

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www.dina.com.mx

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INNOVATION IN FAVOUR OF SUSTAINABILITY

Brazil's multinationals can see the opportunities presented by a low carbon transition, no one more so than fleet management experts Ecofrotas

The numbers speak for themselves: food giant BRF has reduced greenhouse gas emissions by 44% for its fleet and increased vehicle availability by 45%; Votorantim obtained a drop of 25% in conventional pollutant emissions; Grupo EcoRodovias, one of Brazil's largest infrastructure and logistics groups, replaced gasoline with ethanol and emits less carbonic gas into the atmosphere.

These experiences in favour of the environment, the reduction of economic costs and social gains present efficiency indexes thanks to the strategic vision of corporations combined with the most innovative element in fleet management – sustainable management fostered by Ecofrotas.

A market leader in the country, the company is a specialist in developing efficient solutions for the challenging tasks of its clients in reducing the impacts of their fleets.

Ecofrotas is the first Brazilian company to offer sustainable solutions in fleet management. Its main goal is to assist clients to reduce their fuel and maintenance costs, along with their Greenhouse Gas emissions. We manage over 640,000 vehicles for more than 11,500 corporate clients who validate our solutions.

The programs Frota Sustentável (Sustainable Fleet) and Crédito de Carbono (Carbon Credit) are currently among the leading solutions for placing this effort in practice. The first allows the level of sustainable fleet management to be gauged and enhanced, with guidelines geared towards improvements.

By means of indicators, it ensures constant increases in fleet efficiency and a reduction of costs and social and environmental impacts. As such, the first step lies in mapping the situation of clients' vehicles, attributing scores for each of the considered indicators.

Next, opportunities are identified for improvement, along with the definition of an action plan in favour of excellence in sustainability. The last phase includes the application of this plan. Once the cycle is complete, a new evaluation is implemented for its recommencement, which ensures the constant evolution of the management process.

Tight standards

The other program, Crédito de Carbono, unprecedented in the world and approved according to the strictest regulations of the Verified Carbon Standards (VCS), allows for the generation of carbon credits based on the reduction of GHG emissions from commercial vehicle fleets with flex-fuel technology that prioritizes refueling with ethanol.

These credits can be negotiated on voluntary carbon markets. The project is chiefly based on the fact that emissions from burning biofuels in vehicles are considered neutral, as sugarcane absorbs carbonic gas in an equivalent volume during the photosynthesis process.

Raising awareness regarding the environmental importance of ethanol as a clean fuel, in parallel with measures in favour of raising awareness among drivers, coupled with preventative maintenance of vehicles, produces results throughout the country.

Pharmaceutical firm Medley, for example, managed to reduce the GHG emission rate of its fleet by 58% in just six months. Algar Telecom created a new management policy in which ethanol responds for 90% of the fuel used.

Grupo Tombini, a cargo transport company, is celebrating progressive reductions in environmental impacts caused by its trucks on Brazilian roads thanks to fuel consumption management and the correct disposal of waste, in addition to the adoption of code of conduct and conscientious driving training for its drivers.

The development of these projects represents a milestone in the history of Ecofrotas, as they further strengthen its role in offering complete solutions for management geared towards social, economic and environmental improvements.

Considering that Brazil is expected to work towards increasingly more strategic alternatives to continue reducing GHG emissions, the company is certainly on the right track. After all, the good news of reduced deforestation in the Amazon – of 63% between 2005 and 2010, according to data from the Ministry of the Environment – makes the challenge of reducing emissions in other sectors, especially transport, all the more urgent.

Ecofrotas
www.ecofrotas.com.br

eco frotas

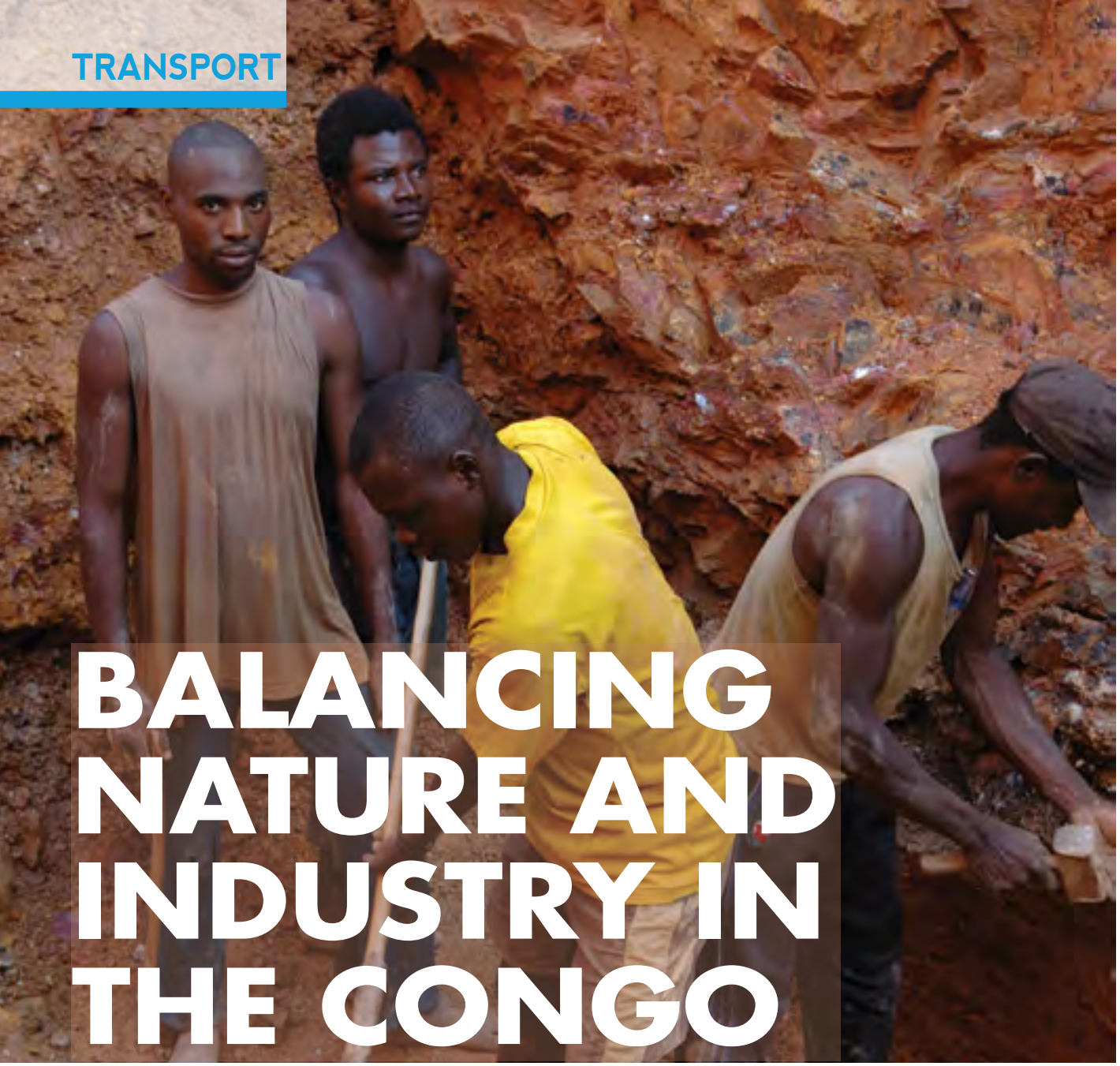

Photo: © Julien Harneis. www.flickr.com.

BALANCING NATURE AND INDUSTRY IN THE CONGO

Ngoyi Ngoyi is a mining company that strives to work for environmental equilibrium

We are blessed to be based in the Congo Basin, home to the Earth's second lung after the Amazon, the Congolese rainforest.

We strive to defend the environment and encourage economic policies that enable the country to develop in a sustainable way.

No nation is immune to global warming. It will affect every heartbeat, in invisible and visible ways from north to south, east to west.

Many say there is nothing more to be done – but we say it is time to take positives from painful experiences and help our plant before it is too late.

We want to deliver an environment to future generations that they can thrive in, not one that could turn into a bomb, destroying their hopes and dreams.

Unbridled capitalism and our obsession with materialism is taking us away from our vision, but without respecting the laws of equilibrium humans cannot survive.

We are proud to have the opportunity to take our message to the UN climate summit in Warsaw this year, and we have message to all the industries taking part.

We must cooperate and develop partnerships to ensure industry in the developing world is better equipped with tools and knowledge, to ensure they can preserve local environments.

At Ngoyi Ngoyi we aim to enlarge our small scale mines but in an environmentally friendly manner.

And we plan to take our message out of the country, through film and music productions to ensure everyone develops their green conscience.

Ngoyi Ngoyi
www.ngoyi-ngoyi-connection.com

Future is Now

Electric public transport for your greener city

China's fastest growing auto maker BYD has developed its 'green city solution'

A range of pure electric vehicles delivering emissions free public transport while reducing operating costs

BYD ebus and BYD e6 private hire vehicle/taxi have been proven by millions of kilometers of passenger-carrying service

These environmentally-friendly vehicles are now being rolled out in major international cities

Already in Europe, a fleet of 35 ebuses have been chosen by Amsterdam Airport Schiphol and e6 PHVs are hard at work on the streets of London

BYD – green pioneer for the future of urban mobility

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SOLAR SALT PRODUCTION IN MEXICO

A Sustainable Development Case Study in a Natural Protected Area

- Ojo de Liebre coastal lagoon in the El Vizcaino Biosphere Reserve, in the central part of the Baja California peninsula, Mexico, presents natural areas that give refuge to different types of wildlife, terrestrial endemic species, gravid whales and calves. At the same time Ojo de Liebre Lagoon is the operation centre of the world's largest Salt field.
- Sea, Wind, Sun and People, these are the elements that make possible the production of Solar Salt at Guerrero Negro, Baja California Sur, Mexico.

Situated on 33,000 hectares of the most appropriate land for such an operation, Exportadora de Sal (ESSA) is the world's largest salt field. Very low rainfall combines with plenty of sunshine and wind on an ancient sea floor adjacent to the shores of Ojo de Liebre Lagoon in the Vizcaíno desert, to create the perfect environment for a solar salt field that benefits our planet and our people.

With over 170,000 bird sightings, Exportadora de Sal solar salt production ponds, together with Ojo de Liebre Lagoon Complex, are a Site of Hemispheric Importance for Shorebirds, designated by the Western Hemisphere Shorebird Reserve Network.

In Guerrero Negro, nature has given a head start in the salt production process: the seawater that flows from the lagoon into the concentration areas is naturally a bit denser than the seawater in the ocean due to the natural cycle of the tide and current flow in the lagoon.

As the seawater slowly flows through the system of concentration ponds, it gradually increases it's density through sun and wind powered evaporation, until it reaches its sodium chloride saturation point.

Whilst increasing the density of seawater, the concentration ponds provide a protected habitat for fish, crustacean (like shrimps and crabs), and sea grass (like Ruppia y Zostera) that supports thousands of birds, including more than 60 migratory species that every year arrive to the Ojo de Liebre lagoon – Guerrero Negro Salt Field complex on their way to reproductive, feeding or growing grounds.

Microbial mats

Also, within 6,000 hectares of the concentration ponds, in addition to the presence of several species of birds, some protozoa, insects and the brine shrimp Artemia, it is noteworthy the presence of microbial mats. These microbial mats are macroscopic arrangements of abundant species of microorganisms.

Microbial components of the mats have an important ecological role, not only as primary producers, nitrogen fixers, mobilization of heavy metals, stabilizing of sediments, and other processes that benefit not only the

solar salt production process, but other species and the environment as well, they also sequester CO2, a known greenhouse gas (GHG).

It is worth noting that recent research has revealed that the microbial mats themselves host greater diversity than any other known environment on Earth and that, according to American space agency (NASA) scientists, the oxygen production of one hectare of these microbial mats, equals the produced by an hectare of a mature forest. That is, microbial mats at ESSA's solar salt production ponds not only sequester CO2, but releases oxygen to the atmosphere, contributing in this way to hamper climate change.

Considering the Sustainable Development definition: "development that meets the needs of the present without compromising the ability of future generations to meet their own needs", the solar salt production process is one of the best examples of this definition; it is based on the use of abundant renewable natural resources, such as seawater, wind and sun, and is fully compatible with the environment.

Almost 60 years of uninterrupted operation has proven that economic development is feasible to achieve without putting aside environmental preservation. On the contrary, ESSA's operation takes place within Mexico's largest Natural Protected Area, the "El Vizcaino" Biosphere Reserve, and World Heritage Site "Whale Sanctuary of El Vizcaino", and in all these years ESSA has proven to be an allied and a partner on environmental conservation, working side by side with authorities and NGOs, and supporting grey whale, sea turtle, pronghorn antelope, birds and many others conservation projects.

Exportadora de Sal is one of the main salt producers and suppliers for chlor-alkali industry in the Pacific Rim, and also in the road de-icing, water softening and food industry salt market in North America.

The company is located in Guerrero Negro, Baja California Sur, Mexico. It is the world's largest salt field, with an average yearly shipments of 7.5 million metric tonnes, and a loading berth located at Cedros Island, Baja California, Mexico, that can accommodate ships of up to 180,000 DWT.

It is a Joint Venture between Mexican government Fideicomiso de Fomento Minero and Mitsubishi Corporation.

ESSA is looking to the future, working everyday for a better world to leave for future generations. Our salt deliveries are made by maritime transportation, to reduce the "carbon footprint" of salt deliveries over land. Also, in order to reduce our carbon footprint, we had implemented a project to increase quality and production capacity through a low combustible consumption optimization process.

Through an oxygen generator-CO2 sequester process, low consumption of fossil combustibles and efficient logistics, ESSA not only achieve environmental targets, but also proactively work towards a better and clean environment, proving once again the viability of technology and nature working together for a better world.

Exportadora de Sal… 59 years operating with respect and in harmony with nature, for generations to come.

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With an annual production of 7.5 million metric tonnes, Exportadora de Sal is the world's largest salt field.

TROUBLE IN PARADISE: CLIMATE CHANGE AND TOURISM

The pressure to build resorts, golf courses, marinas, vacation homes and other tourism infrastructure on coastlines is relentless. Who doesn't want a fresh sea breeze and an ocean view? Yet climate change is already bringing drought, flooding, sea level rise, and greater storm intensity to the world's shores

This puts governments in a difficult situation: on the one hand, they must create jobs for their citizens, and sun-and-sand vacations are among the strongest segments of the tourism industry. On the other hand, governments are obliged to keep citizens safe from the threats they know are looming, and the private sector must protect its own assets.

Consistent Failure

The Center for Responsible Travel has found, however, that governments consistently fail to apply sound climate change adaptation policy to new tourism development, and there is very little incentive for resort developers to consider climate change when drawing their plans.

With increasing frequency, developers include vacation homes with resort, spa, golf course and marina construction. Because the vacation homes are serviced by an on-site branded hotel, they sell quickly. The sale of the vacation homes (often as timeshares) finances the construction of the hotel and other components.

This integrated resort model shortens the timeframe for the same return on investment. Whereas in the past, hoteliers used to invest for the long-term (and would therefore be very much concerned with the health of the destination and the effects of climate change), most of today's coastal tourism developers are in and out within five years. The seas are rising too slowly to be of any import to a short-term investor.

Necessity is the Mother of Invention

Nonetheless, forward-thinking destinations are preserving the natural features (mangroves, dunes, reefs, coastal forests) that protect tourism infrastructure and vulnerable residents from the effects of climate change. Innovative businesses are helping to protect those same features, and are even adding value for guests in the process.

The steps taken by the Maldives, and the Maldives' luxury Soneva Fushi Resort, for example, originated from a need to address climate change, but have yielded numerous other benefits. New protected areas provide both a buffer for infrastructure and a playground for visitors. Reduced hotel waste simultaneously protects coral reefs and the operators' bottom line. Local residents employed by the progressive resort absorb environmental messaging at work, and apply conservation practices at home, too.

By adopting effective public policy and implementing good practices in resort development and operation, destinations and businesses can adapt to a changing climate without sacrificing the visitor experience.

About the contributors:

The Center for Responsible Travel (CREST), a mission-driven institute with offices at Stanford University and in Washington, DC, has developed pioneering expertise on large-scale coastal tourism. We've culled best practices in sustainability from around the world, and work with government and private sector clients to ensure that tourism development meets the realities of climate change and other environmental and social challenges.

Center for Responsible Travel
www.ResponsibleTravel.org

Mitigation and Adaptation Solutions for Tourism Destinations and Businesses


Cyclone destruction, South Africa

Tourism planning and land-use policy
New resort development
Research and capacity building

CREST

Center for Responsible Travel

The Center for Responsible Travel is a mission-driven institute affiliated with Stanford University. Our policy advice and consulting services reduce risk to coastal populations and protect tourism infrastructure investments.

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Photo: © greenseta.

FRACKING: TO DRILL OR NOT TO DRILL?

Like so many energy debates, the furore over fracking sees louder and louder shouts from implacable opponents about the terrible risks/glorious opportunities the new technology offers

By Simon Moore

The media both feeds and feeds off this. As one news producer recently told me, he'd rather have a "disco" between extreme pro and anti positions than air a middle-ground position. The degree of uncertainty in the shale debate appears too great for most of the media and the campaigners to handle. More worrying is how government policy reacts to such huge uncertainties about both shale and its alternatives.

Rising demand

First, let's review a couple of things we can be reasonably confident of. The first is that there will be demand for gas in the future. Even in the UK Committee on Climate Change's most aggressive decarbonisation strategy, there is still at least 40GW of gas capacity on the power system in 2030 (a recent report from Greenpeace and WWF had 42GW of gas capacity in 2020, going to 36W in 2030.)

Gas-fired power stations will be needed, at minimum to fill in gaps when weather-dependent renewables aren't generating. It will also be used for the things like heating, cooking, and industrial applications for several decades. A second one is that, if shale is produced commercially in the UK, it is displacing some more expensive source, at the moment LNG imports. In other words, if it's more expensive than any other way of getting gas, then it won't be produced. So, in that sense, shale gas production will lower prices, at least compared to what they would otherwise have been.

Business case

The impossible questions are by how much and whether shale can be "produced commercially". It rests on resolving a number of uncertainties: about geology; about the economics (both of production and compliance with environmental regulation); about energy and climate policy; and increasingly, about public opinion. That is the point of the exploration process – to learn about the opportunities and the costs of potential production.

The British Geological Survey have given an estimate of the scale of the resource in the ground, in one part of the country, but finding out how much can be extracted, and what it'll cost to get the gas out of there requires test drilling and time. Right now, the only sensible answer to the question of what impact shale will have on UK energy supplies is to say "I don't know".

The answer is the same for almost any energy technology. The question is how you cope with that uncertainty. Unfortunately, in recent years, energy policy in the UK has moved to a position that demands answers before they can be given. Any centrally-planned system (and that is what the forthcoming UK Electricity Market Reform programme is) requires far more information that officials can conceivably possess and assess. It demands that government be able to weigh the costs of a variety of energy technologies, for decades into the future, alongside understanding of demand patterns, climate policy, carbon prices and the rest.

Crystal balls

It is this incessant need to predict and to forecast that obliges government ministers, NGOs, industry and everyone else who has weighed in on fracking over the past months to argue not for a process of discovery to find out more, but instead to argue that shale should either be ruled out for good or is going to save the day. Neither side can possibly know what they claim. Shale gas may transform the UK energy equation. It may not. For many, this uncertainty is unsatisfactory.

The best way we have for exploring the uncertainties of the future is a market, with a proper carbon pricing strategy. We need additional support for new low carbon technologies, but it should not undermine the ability of the market to explore the future and whether new technologies can change prices. Instead, the move away from markets in electricity and toward central-planning means that persuading civil servants of the correctness of your forecasts is far more valuable than the ability to demonstrate it in competition with rivals.

Simon Moore is an Environment & Energy Research Fellow at the London-based Policy Exchange think tank. **Follow him on twitter @SMoore1984**

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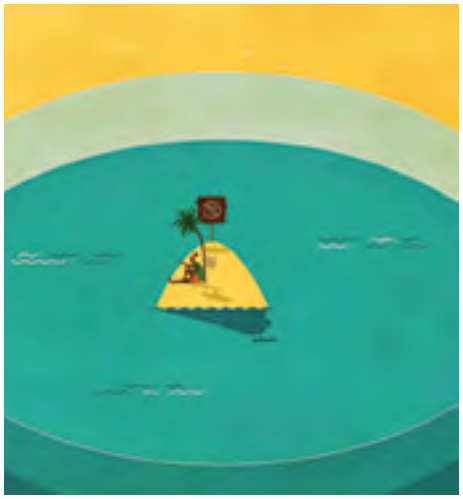

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